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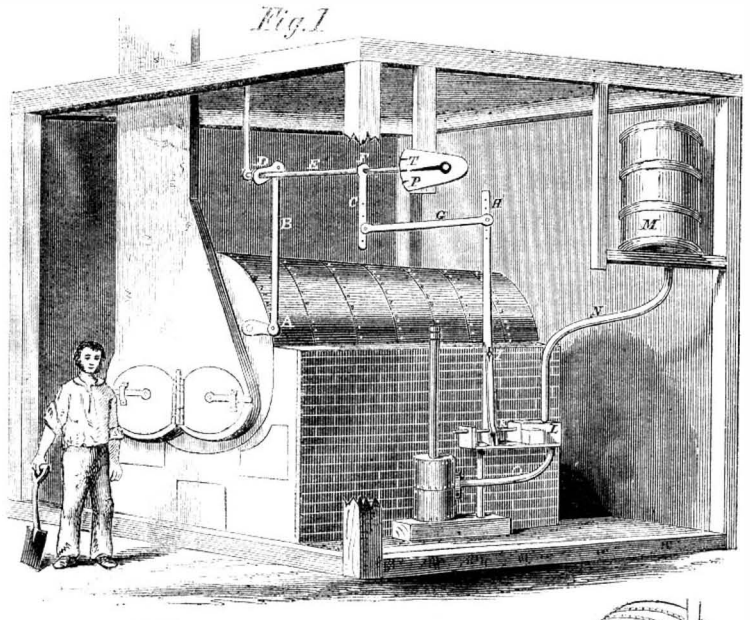
Salmon Cultivation.

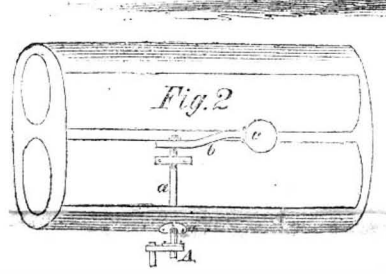
There are some persons, who, if they were to find a canary flying in our woods, would immediately conclude it was a native of our forests, and that all who had asserted it to be of African origin were in error, This seems to be the system of reasoning pursued by our cotemporary, the Pittsburgh *Dispatch*, in regard to salmon. It asserts that the opinion which has heretofore prevailed regarding salmon requiring periodical visits to the sea is erroneous. It says "we presume that those (salmon) propagated in the lakes know as little of salt water as an inland farmer's boy." No fact has been more clearly demonstrated than that the salmon in our lakes make and require periodic excursions to the sea. Salmon is indeed a salt-water fish, and only comes to fresh-water rivers for the purpose of spawning. At one period they swarmed in Oneida lake and Fish creek (in New York), where not one has been found for a number of years. If they had propagated and remained in these waters according to the Pittsburgh *Dispatch*, they would be found there still. The reason why they are never found there now is owing to a barrier erected at Oswego in the form of a dam, which prevents their annual salt and fresh water excursions. As our cotemporary has referred to the SCIENTIFIC AMERICAN as having taught erroneous doctrines on this subject, we must say that our opinions are formed upon practical experience, not vague theory.

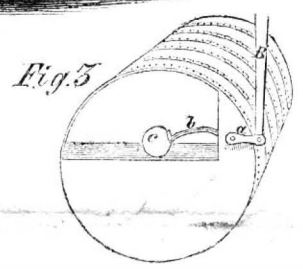
It has been proposed that a bye-wash should be built at every dam on our rivers and creeks once frequented by salmon, for the purpose of allowing them to pass up to old spawning grounds. With the artificial cultivation of young salmon, as has been successfully practiced of late years in France and Great Britain, and dams formed with shutes up which the salmon might run to spawn, we have no doubt but the Merrimac, Connecticut and Hudson rivers would once more abound with these delicious fish. This is a subject which deserves wide spread attention, and as summer is at hand, we present these thoughts for the purpose principally of having them acted upon in their proper season.

SALT.—The application of two to four hundred pounds of salt to the acre has been found to be of great advantage in promoting the growth of all plants and trees. Warm soils of the inland districts, and especially those that have been dressed liberally with animal manure, are the most benefited. A dressing of salt upon a grass lawn will often increase growth and thicken-up the plants far more than a coating of animal manure.

COLMAN'S BOILER WATER REGULATOR.







There is little doubt that a great number of the explosions which take place upon our western river steamboats, are caused by an inefficient supply of water to the boilers, and the boiler becoming red-hot, a great quantity of water is thrown into the spheroidal state, and the moment the boiler cools, either from the fire lowering or the introduction of fresh fuel, the water bursts into steam and causes the horrible accidents that are so often detailed in the newspapers.

The subject of our illustration is a device invented by J. L. Colman, of Vincennes, Ind., for preventing such catastrophes, and is seen in Fig. 1, in perspective, applied to a boiler. Fig. 2 is a plan of the boiler showing the float, and Fig. 3 is an end view of the boiler, with part removed for the same purpose. On the float arbor, *a*, outside the boiler is a crank, A, which can be placed either in the front, or at the side of the boiler, to which the float, *c*, is connected by an arm, *b*. The pitman, B, extends from A to a crank, D, on a rocker shaft, E, to which, at a point, F, the rod, C, is attached. A link, G, is connected with C and the lever, H, which vibrates in the oblong hole, I. The lower end of H is forked, and has the pin, K, of a piston of the slide valve of a water chest, L, in the fork, so that any variation in the level of the water is immediately caused to open the slide valve correspondingly; thus, if the water be fallen very low, then the slide valve is opened wide; if the water only falls a little, then the slide valve is only opened to admit a small quantity of water, so that the boiler is always kept properly full by this automatic arrangement. The cistern, M, should be kept full of water, and the water flows from it through a pipe, N, to the slide valve, L, and from that by a pipe, O, to a heater. On the end of E is a pointer which indicates, on a dial or segment, marked T P, the position of the water in the boiler, any deviation from the straight line showing that either too much or too little water was in the boiler. If the force pump be in order and the cistern be always kept full, there can be little danger of an accident to a boiler which is supplied with one of these regulators. It should be borne in mind that the float should always be placed between the flues, so that it will not be likely to rest on either of them but will always float on the water.

This valuable invention, which has given every satisfaction where it has been applied, was patented March 15, 1859, and the inventor will be happy to furnish any further information upon being addressed as above.

Cutting Sugar Cane—Bagasse Furnaces.

A correspondent residing at St. James, La., recently directed our attention to the subject of improved plantation implements, and suggested that a machine for cutting sugar-cane in the field would be an important and useful invention; and he also stated that a furnace for using the expressed cane for fuel was much wanted. In answer to these propositions as presented on page 204 of the present volume of the SCIENTIFIC AMERICAN, Mr. Evan Skelly, of Plaquemine, Parish of Iberville, La., an intelligent and experienced plantation engineer, assures us that a machine for cutting sugar-cane in the field is impracticable. He has for the past fifteen years been an attentive observer of all things connected with planters' interests, and he visits various parts of Lousiana every year so that his means of obtaining correct information on the subject are extensive and varied. He has never seen sugar-cane standing erect in the field, but always lying "helter-skelter" across the rows, twisted and bent up in every fantastic form. The cane stalks vary greatly in height; and as each has to be cut at a particular joint, no machine can be constructed to make such distinctions in cutting them.

Our St. James correspondent suggested an improvement in furnaces to evaporate a hogshead of sugar with *one* cord of wood, instead of four or five as now used. Mr. Skelly states that such a proposition is preposterous. The sugar-cane of Louisiana contains only six per cent of saccharine matter in the juice, and a hogshead contains 1,100 lbs. of sugar; therefore, no less than 17,200 lbs. of liquid must be evaporated to produce this quantity. As a cord of wood can only evaporate 8,160 lbs. of liquid (according to Haswell), it follows that, with a furnace perfect in every sense, more than two cords of wood are necessary to the evaporation of 1,100 lbs. of sugar.

In 1858 Mr. Skelly secured a patent for a furnace for burning the bagasse (crushed cane) as fuel, and it seems to have been very successful. In the evaporation of eleven hogsheads of sugar only one and a half cords of wood are used with the bagasse, and with this evaporation steam is also furnished for grinding the cane, clarifying, granulating, and the pumping engine. This result is strong evidence in favor of the efficiency of this furnace, which was illustrated and described on page 308 of Vol. XIII. of the SCIENTIFIC AMERICAN.

Nutritive Qualities of the Onion.

The onion deserves notice as an article of great consumption in this country, and it rises in importance when we consider that in some countries, like Spain and Portugal, it forms one of the common and universal supports of life. It is interesting, therefore, to know that, in addition to the peculiar flavor which first recommends it, the onion is remarkably nutritious. According to analysis, the dried onion root contains from twenty-five to thirty per cent of gluten. It ranks, in this respect, with the nutritious pea and the grain of the East. It is not merely as a relish, therefore, that the wayfaring Spaniard eats his onion with his humble crust of bread, as he sits by the refreshing spring; it is because experience has long proved that, like the cheese of the English laborer, it helps to sustain his strength also, and adds—beyond what its bulk would suggest—to the amount of nourishment which his simple meal supplies.

Utilizing Steel Grindings.

In reducing steel tools, such as saws, &c., on grindstones, the detritus is esteemed of so little value as to be allowed to pass away as waste. In Sheffield, England, where so many steel tools are manufactured, attention has lately been directed to utilize this waste, and with some success. It contains about fifty per cent of metal, and the rest of sand grit. By washing, the sand is carried off, and the metal being heavier, it settles to the bottom of the vessel and is saved. After this it is smelted in a crucible and run into ingots, and is found to pay handsomely for the trouble thus bestowed on it.

Tomatoes.

The following method of preparing tomatoes for the table, we are assured by one who has made the experiment, is superior to anything yet discovered for the preparation of that excellent vegetable:—

Take good ripe tomatoes, cut them in slices, and sprinkle over them finely pulverized white sugar, then add claret wine sufficient to cover them. Tomatoes are sometimes prepared in this way with diluted vinegar, but the claret wine imparts to them a richer and more pleasant flavor, more nearly resembling the strawberry than anything else.

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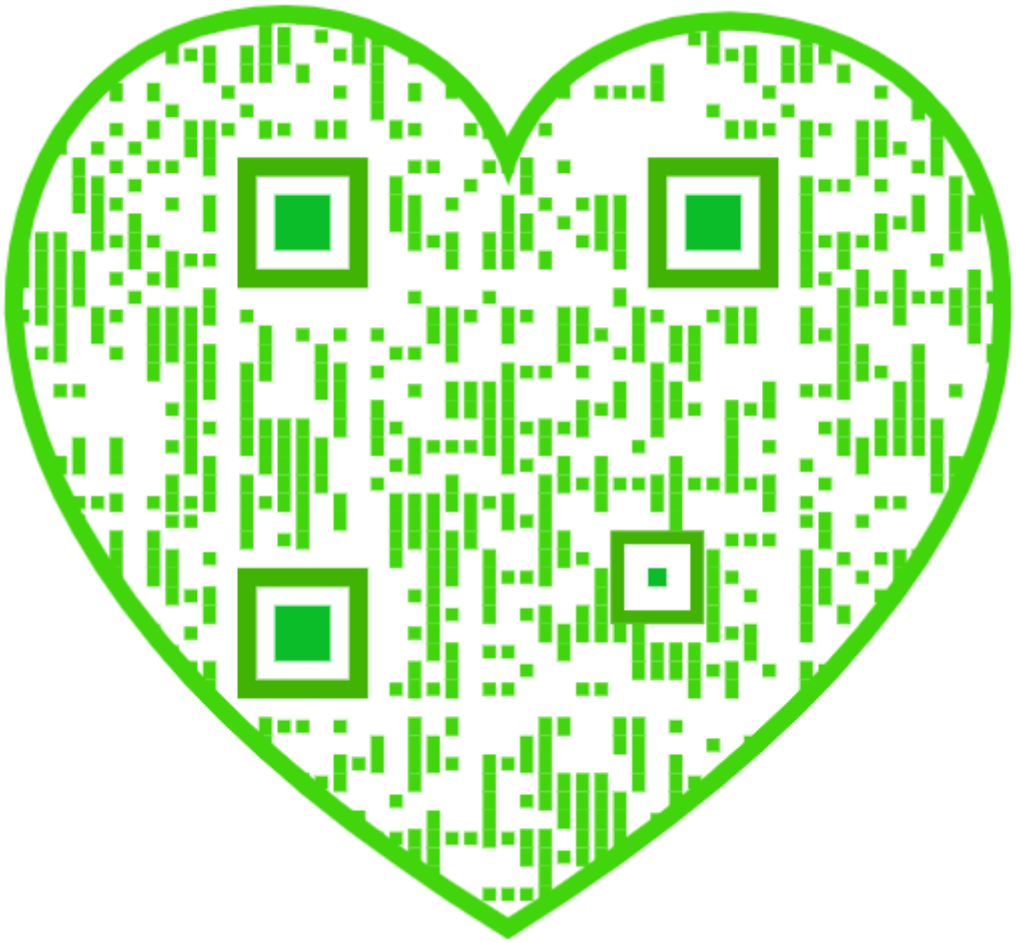

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 10, 1859.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

CULTIVATORS—Milton Alden, of Auburn, N. Y. : I claim the described arrangement and combination of the adjustable shares, B, the frame, A, and the raised thills, C, which are made out of one piece with the handles, D.

[The thills are made of one piece with the handles, and are connected with the frame by means of braces, in such a manner that the thills pass over the growing crops, and that the same are in a horizontal position when attached to the horse or other draft animal, and the frame is so arranged that it can be adjusted to rows of different width, and a larger or smaller number of shares can be attached to it.]

MACHINE FOR SAWING SHINGLES—Wm. H. Auld, of Brighton, Iowa : I claim the adjustable saws, C C, in connection with the reciprocating bolt carriage, L.

I also claim the arrangement of the notched racks, l l, gearing, k k, weight, r, pins, s s, levers, v v a', and bars, x b', attached to the bolt carriage, in connection with the stops, a, for automatically feeding the bolt, M, to the saws, C C.

[A circular saw is employed in this machine to cut the shingles from the bolt. The object of the invention is to facilitate its working by saving the time usually lost in "gigging back," and also by materially limiting the movement of the bolt.]

MACHINES FOR SEPARATING STONES, &C., FROM CLAY—Charles Bamberg and Roman Blaser, of Chicago, Ill.: We claim the conical rotating screen, C, in connection with the separator, F, placed within suitable boxes, A G, constructed and arranged relatively with each other to operate.

[A conical screen of knives is connected with a separator, and placed in a suitable box provided with discharge spouts, and this forms the invention, the object of which is to separate large gravel, stones, and all coarse foreign substances from clay preparatory to its manufacture into bricks, pottery, &c., in order that the articles will not be injured by cracking during the baking process, an accident which often occurs where there is any foreign substance in the clay.]

SOLE-CUTTING MACHINES—Jacob Batchelder, of Salem, Mass. : I claim, first, The particular and relative arrangement of the levers, e e, and e' e', with the cranks, n, p, and f f', for giving the required motions to the cutting knives.

Second, The use and arrangement of the adjustable and intermediate gage board, w', whereby each alternate sole can be cut of equal or unequal width.

STRAW CUTTERS—John Bean and Benj. Wright, of Hudson, Mich.: We claim the arrangement and combination of the knife, C, lever, D, and rock shaft, E.

RAILROADS FOR STREETS—S. A. Beers, of Brooklyn, N. Y.; I claim the construction of upright self-sustaining rails of cast or other iron, with car and carriage track combined, to be laid in public streets and highways, and for no other purpose.

BRICK MACHINES—H. T. Begge, of Liberty, Va., and James Allen, of Lynchburg, Va.: We claim the combination of the bevel wheel, C, cast with the cells, P, therein, for the reception of the molds, D, the plungers, E, with the friction rollers and axles, F, circular inclined plane ring, g, and guard, h, and top plate, B, when these several parts are constructed and arranged for joint operation.

SKATE FASTENING—Edward Behr, of New York City: I claim drawing or tightening the toe and heel straps, G E, of the skate around the foot or the wearer, by means of the screw rods, F I, and nuts, d i, fitted in the stock, A, one end of the straps being attached to the stock, A, and the opposite end to the nuts by means of the cords, b f, or their equivalents.

[This improvement in skates obviates the necessity of buckles, and at the same time places the fastening so that there is no fear of the pantaloons being torn by it.]

SHIPS' STOP BLOCKS—A. J. Bentley and Wm. H. Allen, of New York City : We claim the arrangement of rollers and wedges.

[In this block the rope runs between wedges provided with rollers, and the moment the wedges are released, they are pressed together by two helical springs, and the more the rope is pulled, the faster it is held between the edges.]

CORN PLANTERS—L. F. Bingham and N. O. Pierce, of Chicago, Ill. ; We claim the arrangement of the rotating planter, A, square tube, 10, beam, O, lever, N, "spat down" or leveler, 12, and scra e ,

CORN PLANTERS—A. W. Brinkerhoff, of Upper Sandusky, Ohio : I claim the adjustable coverer, D, and opener, P, in combination with lever, L, the weighted lever, A, operating the rollers, and rod, B.

MANUFACTURE OF PAPER AND PAPER PULP—James Brown, of London, England. Patented in England June 10, 1857 : I claim the treatment of paper and paper material with glycerine, substantially as described, to be employed for printing or other purposes

PLOWS—C. M. Bryan, of Wright City, Mo. : I claim attaching the moldboard, D, by means of the bolts, h h i i, passing through cleets, b b, at the inner side of the moldboard and into the landside, E, and handle, c', the bolts, g d'; and the brace bar, d.

[Some plows have reversible moldboards, and a share at each end, so that both may be used, and as one share becomes dull and worn, it may be displaced by reversing the moldboard, and the new one put in its place. This invention is an improvement on such plows, and consists in the peculiar arrangement of the parts, or the method of attaching or applying the moldboard to the plow, whereby the moldboard may be readily adjusted on the plow, and at the same time firmly secured to it, so as to prevent the possibility of the casual movement of the moldboard.]

MACHINES FOR LOADING HAY—S. V. Essick, of Moultrie, Ohio : I claim the adjustable frame, d, the rake, j, the rakers, h, and m, and the conveyors, g and l.

MACHINES FOR SOWING FERTILIZERS—T. J. Burrall, of Geneva, N. Y. : I claim the arrangement of the revolving cylinder, a, divisions, k', and adjustable perforated slides, 3 3.

MACHINES FOR SPLITTING LEATHER—D. H. Chamberlain, of West Roxbury, Mass. : I claim inclosing the cutting blade within an external casing throughout its entire length.

CONVERTIBLE CARRIAGE SHAFTS—R. J. Colvin, of Lancaster, Pa.: I claim, first, The attachment of removable shafts, by means of adjustable braces, I I, and the hinged caps, Z Z, of the pole crab, N.

Second, The curved or segment bars, A, forming a transverse horizontal slot in which the shafts are supported at their rear end, both when separated in the ordinary way, and when united together as a pole.

Third, The hinged and pivoted thill attachment for accommodating the width of the same to the different positions of the clips upon the axle.

BUTTERFLY VALVES—Nathan Cope and Wm. Hodgson, of Cincinnati, O. : We claim the arrangement and combination of the curved slotted plate, E, valve-box, B, stops, F F', and slotted valve lever, G.

[An engraving and description of this invention will shortly appear in our columns.]

GRAIN SEPARATORS—J. B. Crist, of Evansville, Ind.: I claim the arrangement of the blast passage, G, fan, B', screen, I, and riddle, K, with chute, L, attached, placed within the case or box. A, and in relation with the spouts or discharge passages, d e f N.

[This invention is in the peculiar arrangement of a fan, blast spout, rlddle and screen, and discharge passages, whereby the cleaning of grain and the separating it from all foreign substances is performed very expeditiously.]

PLOWS—E. Davidson, of Batesville, Ark. : I claim the combination of the bar, e, stirrup, c, rod, f, with the adjustable supplemental land-side, F, share, G, and the stationary share, E, and land-side, C.

[The employment of a supplemenlal land-side and share, when properly arranged and applied to the plow constitute this invention, whereby, by a very slight adjustment of the parts, the plow may be rendered available for turning a furrow or as a subsoil plow, answering equally well in either capacity.]

FENCE POST—H. T. Dewey, of Sandusky, O. : I claim the combination of the ribbed post, A, and horizontal flange plate, C, when jointed to each other.

[This is an improvement designed to facilitate the planting of posts, and to secure them in a vertical position when planted.]

CULTIVATORS—Wm. C. Doss, of Lavacca, Texas : I claim the arrangement of the triangular frame, A A B, of shares, J K, with moldboards that may be taken off at pleasure, scraper, N, and cultivators L M.

FURNACES FOR HEATING BUILDINGS—B. W. Dunklee, of Boston, Mass. : I claim combining with the fire-pot and its dome one or more gas circulating pipes, G, arranged with respect to the same, and in the hot-air chamber of the case, E.

I also claim the arrangement of the hot-air discharge pipes, c c, and the wings, d, of the arch of the fire dome.

I also claim, in connection with air-reglster to the front of the ashpot, an air-pipe, v, carried through the air-chamber and into the rear part of the ashpit.

I also claim the combination and arrangement of the hoc valve, p, and the plate or door, r, with the flue, n, the pipe, H, and the opening, t.

METHOD OF COMPENSATING FOR EXPANSION AND CONTRACTION OF METALLIC FENCES—Lewis Eikenberry, of Easton, Pa. : I claim the method of making provision for expansion and contraction in an iron lattice or other open work fence.

STRAW CUTTERS—Stephen Elliott, of Richmond, Ind.: I claim the arrangement of boards, E, crosspiece, F, rods, J and G, and lever, H, with boards B and D, canvas, C, rods R and S, and lever, Q.

SMOOTHING IRON—Andrew Ellison, of Boston, Mass.: I claim attaching the handle plate, A, to the separate heater or block, B, by means of the guide, b, and slot, D, the angular recess, E, and lips, c c, and the latching devices, a F.

METHOD OF STRAPPING WOOD IN BENDING—John L. Field, of Syracuse, N. Y. : I claim the method for connecting metallic straps for bending timber, when the parts are so arranged as to operate in connection with the forming frames.

SEED PLANTERS—D. S. Fisher, of Mauckport, Ind. : I claim the combination and arrangement of the spring hoe, J, adjustable spring roller, I; with the seeding and regulating apparatus.

HARROWS—J. H. French, of Syracuse, N. Y. : I claim the combination and arrangement of three triangular harrows, in such a manner as to form one triple triangular harrow, by connecting the angles with flexible joints or couplings, which admit of the free vibration of the parts, and their ready adaptation to the inequalities of the ground.

Second, I also claim constructing triangular harrows of metallic bars or flat strips of metal, by folding over the same at the angles, in such a manner that the draught strain of the teeth upon one side, shall counteract that upon the other; and forming the couplings at the same operation, by folding in links or hooks at the angles, no bolts being required to secure them, in consequence of the self-bracing of the parts.

CORN PLANTERS—R. B. Gilbert, of Sutherland Springs, Tex.: I claim the arrangement of the share a, coverers, i i, conductor, c, cylinder, d, and hopper, e, wheel, g, and scraper, p, for joint operation.

MAIL BAGS—Richard Gornall, of Baltimore, Md.: I claim the employment with a mail bag, constructed with a socket, G, and furnished with a lock, or other safe fastening of the plates, B B, which terminates in nearly complete tubes, D D, and with the jointed rod or bolt, H, provided with a hasp or other similar attachment.

[With this mode of securing the mouth of the mail bags, it is impossible for mail robbers to get access to the contents of the bag. The contrivance is very simple, consisting simply of a jointed rod which holds the two flaps or jaws together. This rod is held in place by a lock and staple. We regard this as a capital device, and should regard our mail, valuable as it is, perfectly safe if placed in bags having the same applied to them.]

RAT TRAPS—Henry Gortner, of Irville, Ohio : I claim the rotating disks, C C, connected by the plates, b b, in connection with the treadle platform, C', plates, c c, and bar, d, and the supplemental platform, D, the whole being fitted to the box, A.

[This is a self-acting trap, composed of a treadle and bait platform, arranged in connection with a supplemental platform and revolving disks, and a box, so as to form a very simple, cheap and efficient means of catching rats.]

MECHANISM BY WHICH EMPLOYEES REGISTER THEIR TIME—Benj. T. Harris, of Brooklyn, N. Y.; I claim, first, The manner of mounting the cylinder, D, on the spring barrel, f, and with the connecting coupling, 3.

Second, I claim the binding plate, d, fitted and acting to retain the ends of the paper to the cylinder, D.

Third, I claim the arrangement and manner of constructing the slides, i i, and impression point, m m.

Fourth, I claim the rollers, l, and their pawls, o and p, in connection with the slides, i i, and openings, k, in the front plate,

CORN PLANTERS—Saml. E. Hartwell, of New York City : I claim the arrangement of the slide, d, shoe, c, and hoe, i, connecting and acting in the manner and for the purposes substantially as specified.

SEEDING MACHINES—Saml. Henry, of Chenoa, Ill.: I claim the slide bar or seed-distributor, G, with slide, H, fitted therein and placed relatively with the seed-box, F.

[The object of this invention is to obtain, by a very simple means, a machine that will sow various kinds of seed either in drills or broadcast. To effect this a distributor is employed, in connection with an adjustable slide applied to a seed-box, the whole being properly arranged for the purpose.]

HARVESTING MACHINE—Moses G. Hubbard, of Penn Yan, N. Y.: I claim the conformation of the intermediate fingers of a reaping and mowing machine, having a conical form with a straight outline from point to heel, so as to present a straight, gradual taper on the underside as well as above.

I also claim the safety flanch, s, for securing the pitman connection.

MACHINES FOR BREAKING COAL—Chas. W. Kennedy and Richd. T. Brown, of Williamsburg, N. Y.: We claim the arrangement and combination of the polygonal spiked drum, E, spiked crushing-plate, and spiked clearing-plate, I.

[To break coal by this invention an intermittently rotating, polygonal spiked drum is used, and a spiked plated, so that very little coal is wasted as dust, and the work is quickly performed.]

RAILROAD CAR BRAKES—Lewis Kirk, of Reading, Pa.: I claim, first, The arrangement of the hand-wheel, J, and the rod, K, in combination with the pump, B, so that, by depressing the rod, K, the pump is placed in working order, and that the same can be operated by means of the hand-wheel, J'.

Second, The arrangement of the spring catch, k, which is attached to the piston rod, d3, of one of the pump cylinders, in combination with the bell crank, l, or its equivalent, which is operated by means of an eccentric, m'.

Third, Arranging the coupling, M, on a rod, p, in such relation to the spring catch, k, and the cock, E, that by exercising a pressure on the coupling the rod, p, is turned sufficiently to open the cock, E, and to depress the spring catch, k.

[In this invention hydrostatic pressure is employed for operating the brakes, and the pumps used can either be operated by hand or by the pressure which the car exerts on the couplings.]

MAIL BAGS—Thos. J. Lamdin, of Baltimore, Md.: I claim the placing of the staples or buckles on the flap of the bag or pouch, so that when the flap is turned down, said staples or buckles will pass through the grummets.

I also claim the manner of forming the seams of the bag or pouch, so that they cannot be cut open and resewn from the outside of the back without instant detection on looking at the seam, as its whole character must be changed in any such attempt or effort.

APPARATUS FOR CONDUCTING WATER TO CISTERNS—Jabes Lewis, of New Orleans, La.: I claim making the change in openings from the box, A, or its equivalent, by the employment of a weight containing water supplied from a roof, when the weight can lose the water it contained, and thus reduce its force of gravity to allow another change to be made, by which the water is conducted in separate directions from and to the cistern.

JIB-BOOM FOR VESSELS—Chas. L. Linnell, of Truro, Mass.: I claim the application of the after jib-boom to the bowsprit by means, not only of the slide rod applied to the bowsprit, but the slider connected with the boom.

SPOKE SHAVE—Benj. Tolman, (assignor to himself and A. T. Ramsdell,) of Pembroke, Mass.: I claim an improved spoke shave, constructed with an adjustable knife and an adjustable throat-gage, arranged and applied to the stock and so as to move with respect to one another.

BENCH PLANE—Wm. S. Loughborough, of Rochester, N. Y.: I claim, first, The combination of the screw, 2, (which takes effect in the projection, R,) spring or yielding cap, C, bit, B, and screw. 1, for the purpose of varying the cut of the bit, and at the same time, and proportionally, the space of the throat, the base of the bit, B, being the fulcrum upon which it swings when said changes are made, the said combination being applicable for the adjustment of the bit in all kinds of planes.

Second, The adjustable parallel fence, F, constructed with diagonal slots, D, for the set screws, Y, said fence being applicable to match planes, and also the stop, P, with the slot running up diagonally from the face, the set screw, K, and the guide pin, N, keeping it in position, said stop being applicable to panel plows and dadoes.

IMPROVED ROTARY ENGINE—Saml. D. Lount, of Summerville, Mich.: I claim the arrangement and combination of the rotating head, I, provided with sliding pistons, and placed eccentrically within the case, A, the saddles, M, applied to the pistons and the valves, N O.

[This rotary engine or pump is so arranged that the water or steam under pressure securely packs all the joints and prevents leakage, while it ensures the action of the machine.]

APPARATUS FOR LAYING METAL LEAF ON MOLDINGS, &C.—Robt. Marcher, of New York City : I claim the method of laying leaf metal on moldings and other surfaces by means of a roller.

And I also claim operating the roller in laying leaf metal on surfaces by the force of capillary attraction.

And I also claim the combination of the rails, the table for holding the book of leaf metal, and the means for holding the article to be gilded or silvered, or the equivalents of the said elements, in combination with the roller.

And, finally, I claim the combination of the roller and rails, or equivalent guide ways, with the rebate or equivalent gage.

RAILROAD SWITCH—T. Mayhew, of Poughkeepsie, N. Y.: I claim the employment or use of the adjustable platform, E, in connection with the switch bar, B, and gearing, d h' h'' h''' h'''', springs, c e, and stops, i g.

[The object of this invention is to prevent accidents attending the carelessness of switchmen in failing to properly adjust the switch after moving it in line with a track to accommodate a passing train. The invention consists in the employment of a movable platform arranged in connection with certain gearing, a switch-bar and springs, whereby the attendance of the switchman is rendered imperative at every adjustment of the switch, and while the train is passing over it, and the return movement of the switch to its normal position after being temporarily moved is fully insured.]

PUMP BOXES—John Munson, of San Jose, Cal.: I claim constructing the pump boxes of the rings, a, bands, e, provided with the uprights, g g, and the traverse plates, h, when the boxes, thus constructed, are provided with the valves, l, fitted thereon.

I further claim securing the lower box, C, in the bottom of the cylinder, A, by means of the traverse plate, h, on said box, and flanch, a, secured to the inner side of the cylinder.

[These boxes can have their packing secured to them with the greatest facility, and the valves kept in proper position and working order.]

PLANT PROTECTORS—Eli Mosher, of Flushing, Mich.: I claim the arrangement and combination of the folding sides, a a a' a'', cover B, and fastening cord, b.

[These protectors are simply rectangular wooden boxes covered at the top with gauze or some other material which which will admit the sun's rays, air and moisture, and at the same time exclude the insects; the boxes being set over the plants they are to protect. The object of the invention is to render the boxes capable of being folded when not in use, so that they may be stowed away very compactly, and still very readily unfolded and secured in an open state when designed for use, and also folded or collapsed with equal facility when hey are to be stowed away.]

WIND-MILLS—Wm. McAllister, of South Reading, Mass.: I claim the series of narrow sails, 1 2 3 4, attached to vertically sliding rods, a b c d, and united by means of the cords, s s, and operating in combination with the adjusting ropes, I.

PLOWS—James C. Molthrup, of Bucyrus, Ohio : I claim giving the beam, B B', longitudinal and vertical motion by means of the bearing plates, d'', slots, c c', short rear bolt, b, and long vibrating front bolt, f.

MANUFACTURE OF FELT HATS—James Monach, of Rahway, N. J.: I claim the corrugation of the brims of felt or soft hats by the employment of dies on both sides of the brim, whereby the corrugation is attained without stretching the brim, both the surfaces being finished at one operation.

ROASTERS—James Mulligan, of New York City : I claim the detachable journal bearings, b b, constructed so as to be clamped on to the edges of the openings in the stove or range and receive the spit, c.

PLOWS—Williamson Nichols, of Floyd County, Ga.: I claim the arrangement of the forked beam, G, segmental head, F, holes, g, bolts, 4 and 5, clevis, f, stock, H, handle, L, rivet, c, and holes, 1 2 3.

BRIDLES—R. B. Norvell, of Huntsville, Ala.: I claim the cord, F, attached to a bridle or halter by passing the same through the bit rings or halter rings, and over the pulleys, c c', or their equivalents, and under the throat of a horse or other animal.

[An engraving and description of this was published on page 272 of the present volume of the SCIENTIFIC AMERICAN.]

IRON TIES FOR COTTON BALES—James Nuttall, of New Orleans, La.; I claim the combination of the plate, s, and movable clasp, c, when made use of in confining the hooks, a and b, as a fastening for iron ties for cotton bales.

CLOTHES FRAME—Henry A. Nutting, of South Amherst, Mass.: I claim a clothes frame composed substantially of the rod or stem, c, the two hubs, A B, and the two sets of arms, D E.

CULTIVATORS—Isaac B. Palamountain, of Tarboro', N. C.: I claim the arrangement of the beam, A, stock, B, center bar, B, standard, F, wings, G G and J, share, D, and seat, H, for joint operation.

HORSE HAY-RAKES—George S. Reynolds, of East Bethel, Vt.: I claim the arrangement of the boxes, k, arch arms, b, elastic spring, g, shoe, d, strap, t, frame, r, and strap, l.

TOOLS FOR MANUFACTURE OF FIRE-ARMS—Augustus Rebetey, of Norwich, Conn.: I claim the use of a crank shaft, A B C, to carry a cutter, I, such crank shaft suspended at the centres of an engine lathe, or any similar machine, and receiving its motion from the counter shaft of such lathe, or similar machine, for the purpose of cutting an eccentric shaped slot in the barrel of a pistol, or anything else.

WATER-WHEELS—Sylvanus Richardson, of Jericho, Vt.: I claim the construction and arrangement of the shutes formed by irons, g and i, and the arrangement of openings in plate, f, in Fig. 3, and corresponding openings in plate, f, in Fig. 5, and the arrangement of plate, c c, and wheel, e e e e, and case, a a, and draft tube, d, and the combination of the same.

HEMP BRAKES—John W. Rinehart, of Lexington, Mo.: I claim the particular manner of operating the beater frame, B, to wit, by means of the lever, j, links, k k, lever, l, shaft, C, arm, m, connecting rod, n, and crank, o.

[A swinging or oscillating frame is provided with swords or beaters, and placed on a suitable frame that is provided with suitable stationary beaters, between which the oscillating ones work. The oscillating frame is operated from a rotating shaft and hemp, in this machine, can be quickly broken and the fibers perfectly separated,]

HERNIAL TRUSSES—S. S. Ritter, of Philadelphia, Pa.: I claim the construction of a surgical truss having a short spring, with one or more plates of metal, extending in front about half round the body, and held by a strap or straps, forming the other half of the girdle, when the said spring is curved, as shown, for the purpose of making a more agreeable pressure on the hernia, and for fitting the ends of the spring better to the hips, thus rendering the truss more comfortable to the patient.

Second, I claim the described pad, having a central prominence surrounded by a groove and ridge, when the face of said pad is made in one piece.

APPARATUS FOR VULCANIZING RUBBER—Edwd. A. L. Roberts and Wm. J. Demorest, of New York City : I claim the general arrangement of the stove, boiler and vulcanizing chamber.

GRAIN SHOVELS—David B. Rogers, of Pittsburgh, Pa.: I claim the so bending a plate of iron into the shape of a shovel as to form a socket for the handle out of the same piece of iron,

CLOCK DIAL—S. E. Root, of Bristol, Conn.: I claim the combination of a clock dial, B, metallic back, A, frame, C, as a new manufacture, specifically, as and for the purpose described.

PRINTING PRESSES—Stephen P. Ruggles, of Boston, Mass.: I claim, first, the combination of two screws having different sized threads, and operating together substantially as described, to give a greater motion to a platen, or its equivalent, at one time, and more power at another time, as may be desired.

I also claim connecting two such screws together, and to the lever or bar that actuates them, by a strong helical spring, that, by being wound up, becomes a clamp, so as to put the two screws in action one after the other, substantially as described.

I also claim running out the bed of the press on inclined ways for the purpose of increasing the distance between the bed and platen, which makes a better entrance for the frisket, blankets, sheet, form, &c., by affording more space when they are being run under the platen, as described.

AUTOMATIC PRIMER FOR FIRE-ARMS—Jacob Rupertus, of Philadelphia, Pa.: I claim, first, The feeding slide lever, B, applied in combination with the hammer, to constitute a portion of the thumb-piece thereof, and with an interposed spring, l, substantially as described.

Second, Constructing and applying the feeding piston, q, to roll within the magazine, substantially as and for the purpose set forth.

Third, Attaching the feeding piston, q, which drives the priming forward in the magazine to a spring or flexible driver which winds on and off a spring barrel, substantially as and for the purpose described.

[A description of this invention will be found on another page.]

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PUMPS—John Selser, of Williamsport, Pa.: I claim, first, Draining the standing-pipe, D, and relieving the air-chamber, C, from pressure by allowing the water to escape upward through the cylinder, B, whenever the plunger rod, E, is sufficiently depressed, thereby draining the pipe without draining the pump itself, substantially in the manner set forth.

Second, The splash plate, G, with its aperture, O, when used in connection with the vertical termination, D', of the discharge pipe, substantially as and for the purpose set forth.

SHAFTING FOR ENDLESS CHAIN HORSE-POWERS—Theodore Sharp, of Bloomington, Ill.: I claim the gliding shaft, A A, reels with slotted or mortised hubs, R R, constructed and operating in the manner and for the purpose substantially as described.

SEED PLANTERS—David M. Smith, of Springfield, Vt.: I claim the combination of the following devices for operating the dropping slide, viz., the spring, k, the rack, C, the pinion, D, the rack lifter, m, the groove, r, of the rack, and the latch, u, arranged substantially as specified.

I also claim the application of the rack lifter, m, to the rack, so as to be adjustable thereon, in the manner and for the purpose as set forth.

I also claim combining with the rack, C, and apparatus carried by it, the latch elevator, y, for moving the rack out of gear with the pinion and holding the rack from slipping or being thrown backward, the object being not only to prepare the rack for causing the machine to plant the first dropping of seed in the right place, but to hold the rack out of gear with the pinion while the machine is being moved over the ground and it may not be desirable to have it plant seed.

ROTARY STEAM-ENGINES—Mathew Smith, of Pittsburgh, Pa.: I claim the combination and arrangement of a revolving cylinder, steam chest, cam yoke, supply and exhaust passages, with a stationary cam, supply and exhaust chambers, when arranged, combined, and operated as described, and for the purposes set forth.

LATHES FOR TURNING IRREGULAR FORMS—Charles Spring and Andrew Spring, of Boston, Mass.: We claim the combination of a griping chuck, by which an article can be so held by one end as to present the other free to be operated upon, with a rest preceding the cutting tool, when it is combined with a guide cam, or its equivalent, which modifies the movement of the cutting tool, all operating together for the purpose set forth.

APPARATUS FOR SUPERHEATING STEAM—George A. Stone, of Roxbury, Mass.: I claim a steam jet, or the equivalent thereof, located substantially in the position and serving the purpose specified, in combination with a superheating apparatus, which is heated by a portion of the gaseous products of combustion, and is otherwise substantially the same as set forth.

RAKING ATTACHMENT FOR HARVESTING MACHINES—Geo. Tatlock, of Salem, Ind.: I claim operating the rake-head, D, which is pivoted to the sliding bar, C, through the medium of the rotating shaft, r, connecting rod, p, rock-shaft, l, connected respectively with the rod, p, and sliding bar, C, by the arms, k o, in connection with the arm, E, attached to the rake-head, the loop or guide, d, attached to the arm, E, and the bars or arms, g h attached to the platform, the whole being arranged substantially as and for the purpose set forth.

[This is an improvement in that class of raking devices in which a rake-head is made to traverse the platform in a direction parallel with the sickle, or at right angles with the line of draft. The object of the invention is to give the above motion to the rake-head, and also the necessary rising and falling movement of the same at the termination of its strokes, by a very simple means that may be readily applied to harvesters and admits of being directly connected to the driving-wheel.]

BUREAU BEDSTEAD—H. L. Thistle, of New York City: I claim combining the bedstead frame with the wardrobe, or other case, by means of the hinged links and movable slides, substantially as described, whereby the bed can be let down to a lower level than by any other construction before known, while at the same time it can be let down by a single movement, and within a space no longer than the bedstead, and without the necessity of first drawing out part of the structure from the wall, or making joints in the side-rails, or pieces, the hinged links and slides giving to the structure all the foregoing advantages, as set forth.

And I also claim, in combination with the bedstead frame connected with the case by the hinged links and slides, the weighing of the head end of the frame to balance the weight of the foot end when lifting it up, and thereby facilitate the manipulation, substantially as described.

And I also claim forming the support for the foot end of the bedstead frame by a hinged panel, substantially as described, so that the said support, when the bed is thrown up, shall form part of the front of the wardrobe, or other piece of furniture, as set forth.

HARVESTING MACHINES—Saml. Thomas, of Burnett, Wis.: I claim the false pole, K B, with its attached sliding gage, E C, which may be adjusted at pleasure, so as to prevent side draft and pressure upon the near horse, in the manner and for the purpose specified.

ROTARY HARROWS—Geo. W. Toleman, of Augusta, Ky.: I claim the arrangement of the frame, A, shaft, 3, iron circle, 1, roller, 2, rods, B B' C, and rod or hook, 4, operating conjointly, as set forth, and for the purposes specified.

STOVES—John Van and Henry V. Barringer, of Cincinnati, Ohio: We claim the swinging grated door or hearth, h, and sliding and swinging register, g, in combination with the supporting legs, r r, and stove, A, arranged and operating substantially as and for the purposes set forth.

HILLSIDE PLOWS—Edwd. Van Camp, of Beadington, N. J.: I claim making the share, the landside and the landside brace of hillside plows, each in one piece, and uniting them together to the moldboard and beam, in the manner and for the purpose set forth, thus making a cheap, strong and efficient plow for hillside plowing.

GRAIN SEPARATORS—James Vaughn, of Magnolia, Ill.: I claim the arrangement and combination of the semi-cylindrical hopper, F, having a depression, b, in its center, with the screen, E, buckets, d, spout, D, fan, J, and spout, I, as and for the purpose shown and described.

[This is an improvement in that class of corn-shellers and separators in which a revolving screen is employed as a portion of the separating device. The invention consists in attaching to the outer side of such screen a series of oblique scrapers and buckets, and having the screen fitted in or over a semi-cylindrical concave hopper, the parts being arranged so as to facilitate the gathering and conveying of the shelled corn from the concave hopper to the elevating device.]

MEAT SLICER—Wm. Vine, of Hartford, Conn.: I claim the beveled lip, T, and the pendant, G, for the purpose described, in combination with the other parts of the dried meat slicer, substantially as set forth.

LOCK—Thos. K. Webster, of Lawrence, Mass.: I claim the guard or fender, E, as described in the specification, and for the purpose described.

CHURN—Leonardo Westbrook, of New York City: I claim the use of the projecting rim, X X X, and the revolving disk, C, working over the same, in combination with the fixed and revolving radial dashers, and with or without the regulating thumb-screw, s, all constructed and operating substantially as described and for the purposes set forth.

ICE-PICK—Milton White, Howard White, Henry T. White and Joseph White, of Philadelphia, Pa.: We claim the combination of the ball, A, and tube, B B, sliding upon the stem, C C, in such a manner that the blow may be struck upon the head of the stem, substantially as described.

STOVES—John Geo. Widmann, of New York City: I claim the arrangement and combination of the gas tubes, d, with the cylinder, D, and fire openings, b, so that the gases which arise from the heating of the coal will be compelled to pass down into the fire, as shown and described.

[By this arrangement of the flues of a stove the whole heat developed in the combustion of coal is made available, and little or none passes up the chimney.]

HARVESTING MACHINES—Hosea Willard and Robert Ross, of Vergennes, Vt.: We claim, first, The arrangement and combination of the hinged bar, J, with the lever, I, substantially as and for the purpose shown and described.

Second, The arrangement and combination of the adjustable spring, b', bar, D, adjustable rod, i', spring, h', and finger bar, G, as and for the purpose shown and described.

[This is an improvement on a patent granted to the same inventor November 3, 1857, and the object of the present invention is to retain or support the finger bar more fully than formerly, so that it will not be strained or racked by use, but be kept firmly in position. The finger bar is facilitated in its motion when temporarily raised from the ground, and as regards the throwing up of its front edge and placing it higher or lower to cut the crop the desired hight. It also separates the standing from the cut grass, so that the edge of the standing grass will be left perfectly erect as the machine moves along.]

HARVESTING MACHINES—William H. Wilson, of Denton, Md.: I claim, first, The combination of the vibrating sector, A, rack, p, lattice frame, C, and carriage, j, with the beam, B, or its equivalent, and the rake, D, the several parts being arranged substantially as described, for the purpose set forth.

Second, In combination with the rake, D, having its center driven backward and forward over the platform, the swiveling plate, f, ratches, r, and pawl, n', and adjustable shifting stop, g4, or its equivalent, whereby the rake is turned upon its center and caused to sweep the grain off, as specified.

Thirdly, In combination with the rake, D, having its center driven back and forth over the platform, as specified, the guiding-plate, w, and rolls, p' p'', or their equivalents, whereby the rake is thrown back into the proper position to sweep across the platform after having discharged a sheaf, as described.

Fourth, The combination of the rod, M, with the rod, s, arm, r, cam, y, and spring, N, the whole arranged and operating as and for the purpose set forth.

Fifth, The stop, h, arranged as described for the purpose set forth.

COMBINED METALLIC STREET CURB AND GUTTER—Wm. E. Worthen, of New York City: I claim the compound metallic curb and gutter, constructed substantially in the manner specified, whereby advantages, substantially such as are set forth, are attained.

PLOWS—T. J. de Yampert, of Shohola, Pa.: I claim, first, A revolving cone having under-cut or overhanging curved flanges or wings that extend entirely from the base to the point of the cone, so that it will revolve upon its shaft or journal by the resistance of the earth alone against it and without being driven by other forces, as described.

I also claim, in combination with a cone furnished with spiral under-cut flanges, and revolving by the resistance of the earth against it, the moldboard and landside for turning over the loosened earth and directing the plow in its path, substantially as described.

[This plow is provided with a rotary share that facilitates its motion through the land, and more thoroughly breaks up the soil.]

PRUNING KNIFE—G. G. Belcher, (assignor to himself and Jos. S. Hill,) of Worcester, Mass.: I claim, first, Arranging the blade of a knife in such a manner that it opens and closes by turning one or both parts of the handle, substantially as specified.

Second, The pins, i i', on the blade, B, arranged in combination with the slots, h, in the plates, a a', of the handle for the purpose of operating the blade, and keeping the same rigid when it is opened as well as when it is closed, substantially as set forth.

Third, The slide, C, or its equivalent, arranged in combination with the eye, d, for the purpose of securing the two parts of the handle together, substantially in the manner described.

[The object of this invention is to make the blade of the knife perfectly rigid with the handle when the knife is opened, and at the same time it is so arranged that it can be opened and shut quite easily without any danger of cutting the fingers.]

BOOT-CRIMPING MACHINES—James D. Black, (assignor to himself and Ezekiel Hallet, Jr.,) of Boston, Mass.: I claim machines for crimping boot-legs, in which the "hitch-on" is raised by the hand of the operator, pivoting the device by which the "hitch-on" is raised to a spring clock, or its equivalent, for the purpose set forth.

Second, I claim the peculiar construction of "hitch-on" described, the movable jaws, p, being temporarily closed upon both sides, by a spring, r, so that they may be separately opened, as set forth, for the insertion of the leather, and may be permanently closed by a single screw, as described.

HAND-PLANE—Simeon S. Dodge, of Sunapee, N. H., assignor to himself and Edmund Burke, of Newport, N. H.: I claim, first, the curved adjustable cap iron, D, constructed and operating substantially as described.

Second, The combination of the adjustable cap iron, D, with the bolt H, the set screws, G, G, the thumb screw, E, and the break iron C, constructed and operating substantially as described.

KNAPSACKS—William Griffiths, (assignor to himself and Joseph H. Lambert,) of Philadelphia, Pa.: I claim a military knapsack, having the usual frame or case, made and adapted thereto, so as to be convertible, substantially as and for the purposes described, as an improved article of manufacture.

CORN-PLANTERS—Wm. H. King, (assignor to himself and Nelson Colson,) of Charleston, Ill.: I claim, first, In combination with the cams, L, and the arm, M, the arrangement of the rods, o, in such relation to the seed cells, c, that they push out the corn contained in the same, substantially as described,

Second, The arrangement of the marker, g, in combination with scraper, h, so that the same never fails to make a clear mark in the track of the driving wheel, substantially in the manner set forth.

[This is an excellent corn-planter, easily operated, and not liable to get out of order.]

SEED-DRILLS—Chas. Learned, (assignor to himself and Geo. P. Stevens,) of Indianapolis, Ind.: I claim the guard, or series of straps, K, in combination with the toothed roller, G, and elastic guard, J, when operated in connection with the roller, H, and agitator, I.

MAKING STEELS FOR SHARPENING KNIVES—Saml. Lee, (assignor to Chas. S. Pomeroy,) of Taunton, Mass.: I claim the combination of these devices, so that by their continued action they shall produce a steel with sharp ribs or edges, in the direction of its length, substantially as set forth.

COOKING STOVES—Henry G. Leonard, (assignor to Lemuel M. Leonard,) of Taunton, Mass.: I claim so constructing and arranging one or more of the oven plates of the stove, that it or they can be removed, and the flue or flues cleaned, and the plates replaced, substantially as described, without loosening or separating the plates which form the outside of the stove.

I also claim making one or more of the interior flue plates, so that it can be removed and the flue cleaned, and the plate replaced, substantially as described, without loosening or separating the plates which form the outside of the stove.

SINGLE THREAD STITCHES—James S. McCurdy, (assignor to Elias Howe, Jr.,) of Brooklyn, N. Y.: I claim a single thread interloped stitch, in which each successive loop is encircled by a tight coil of the thread of the preceding loop, substantially as described.

DEVICE FOR SUSPENDING AND LIBERATING SHIP'S BOATS—Daniel P. Mealey, (assignor to himself and A. E. H. Johnson, of Washington, D. C.: I claim the hanger, constructed with a seat or seats, for the ring of the boat to rest upon, in combination with the seat formed in the tumbler, in such manner that the seat or seats of the hanger shall coincide with the seat in the tumbler, that a large proportion of the weight and strain may be supported by the hanger, which increases the power of the device to resist strains, and facilitates the unlatching of the tumbler, substantially as described.

I claim also, in combination with the arrangement of the opening, E, in the tumbler, in combination with the seats, c c, and that portion, m, of the hanger which rises above and overhangs them, in such manner that when the seats of the hanger and tumbler coincide, the mouth of said opening will pass and be inclosed by the hanger, in the manner and for the purposes described.

I also claim, in combination with the tumbler and hanger, arranged as described, extending the legs of the hanger below the range of motion of the opening in the tumbler, so as to form a cut-off to the passage of the ring, and thus prevent it from being carried round with the motion of the tumbler, substantially as described.

I also claim, in combination with a boat detacher, making a recess or shoulder, f, in the tumbler, in combination with a snug or projection, g, on the dead-eye, whereby the connection of the ring of the boat with the tumbler may be made with one hand, when necessary, substantially as described.

CHURN—James O. Merrill, (assignor to Wm. A. Swain,) of Chichester, N. H.: I claim the arrangement of the oscillating lever, L, and its weight, W, with the vibrating shaft, M, the vibrating lever, E, the auxiliary levers, F F,' and the alternate reciprocating dasher arms, G G', with their dasher, N N', constructed and operating substantially, as set forth, by which the oscillating power of the pendulum is applied to the process of churning butter.

FACTITIOUS ENAMELED LEATHER—James W. Munroe, (assignor to John Southworth and Wm. R. McKenzie,) of Fall River, Mass.: I claim, as a new article of manufacture, the within-described artificial leather, composed of two or more thicknesses of cloth, united by cement and varnish, as set forth.

MACHINES FOR DIGGING AND GATHERING POTATOES—Jonathan B. Parvin, (assignor to himself and Elias Stratton,) of Heightstown, N. J.: I claim the combination of the weed-cutter, D, and roller, C, when mounted on a swivel and applied to a potato digger, substantially in the manner and for the purpose described.

I also claim hinging the frame that carries the plow and the endless apron, K, on the shaft, c, when used in combination with the lever, links and rods, by which the operator from his seat can raise up, lower, or hold up the plow and apron, substantially as described.

I also claim the combination of the adjustable endless apron, k, horizontal and vertically vibrating grate, O, and the elevating apparatus, substantially as described.

BASIN COCK—G. W. Randall (assignor to Reuben J Todd), of Boston, Mass.: I claim the wash basin cock, or faucet, as made with cold and hot water inlet passages, d e, and the column passage, h, arranged in the socket, C, and column, A, and with respect to the discharging spout, B, substantially as described, in order to enable a person, by turning the movable part, or parts, to discharge either cold or hot water, or a mixture of the same from the faucet, or to close off both hot and cold water induction passages as circumstances may require.

TOOLS FOR MANUFACTURING PISTOLS—Augustus Rebetey, of Norwich, Conn., assignor to the Manhattan Firearms Manufacturing Company of New York City: I claim the use of a frame, constructed as described, having a profile in one plate of it, to shape and finish a corresponding recess in the side plate of a pistol, by means of a revolving cutter, governed by the outlines of said profile.

ROTARY CUTTERS AND MODE OF OPERATING THEM FOR MOLDINGS—Frederick Schute (assignor to himself and Philip P. Weis) of Philadelphia, Pa.: I claim a revolving cutter, with any convenient number of double cutting edges of the form of the tongue, groove, bead or hollows to be cut—one cutting edge being the reverse of the other in each pair, so that one cutting edge only of each pair shall have a cutting effect, when the cutter revolves in one direction—the other edge to cut when the cutter revolves in a contrary direction, the other edge to cut when the cutter revolves in a contrary direction, and so that one cutting edge of each pair shall act as a guard, to prevent the adjacent edge from penetrating too deep into the wood, when the said cutter with double-cutting edges, thus constructed, is secured to a spindle capable of having the direction of its rotation readily reversed, as and for the purpose set forth.

STEAM ENGINES—G. F. Lombard, of New Orleans, La. Patented in England Oct. 10, 1859: I claim, first, The relative arrangement of two cylinders, four pistons, two rocking beams, two steam chests with valves, and the specified connections which combine and operate the same, in the manner and for the purpose set forth.

Second, The application of the exhaust steam of the engine to the crank, or eccentric shaft, through a fly-wheel, constructed and combined with the engine and crank shaft, substantially as and for the purposes set forth.

STEAM ENGINE—J. A. Whipple (assignor to James Whipple and B. F. Cooke), of Boston, Mass.: I claim the described intermittent rotary engine, consisting of the cylinder, F, the heads, e, and pistons, h h', operating in the manner substantially as described.

STEAM AND WATER GAGE—Cornelia H. Williams, of Williamsburg, N. Y. (administratrix of the estate of Augustus Williams, deceased), assignor to Anthony Pollak, of Washington, D. C., assignor to A. N. Clark, of Beverley, Mass.: What is claimed as the invention of the deceased is, first, Combining the vessel separate and distinct from but connected to the boiler by means of two pipes, as described, containing a float having an indicator, or pointer, attached thereto, with the transparent tube, or steam chamber, when said parts are constructed and arranged in relation to each other, to operate in the manner and for the purposes substantially as set forth.

Second, The general arrangement of the instrument for forming an alarm water-gage by combining with the indicator water gage constructed as described, a whistle attached to a separate chamber containing a valve arranged to be operated by the float, so as to admit steam to said whistle to give alarm, when required, substantially as set forth.

HORSE-SHOE MACHINE—J. B. Collen (assignor to himself and Pascal Yearsley), of Philadelphia, Pa.: I claim, first, Bending the heated bar of iron to the requisite form, by applying it to a revolving former of the shape of the inside of the shoe, when the said former is arranged to hold the bent iron, while it is acted upon by the dies, as set forth.

Second, The combination of the revolving former, q, with the cutter, x, when the latter is so arranged, in respect to the former, that the edge of the cutter shall coincide, or nearly coincide with the circular path traversed by the outer edge of the former, and when the cutter is hung to the movable bar, y, or its equivalent, as set forth and for the purpose specified.

Third, The die, N, the spindle, Q, its former, q, and the sleeve, S, in combination with the counter-die, T, on the spindle, u, when the whole of the parts are arranged in respect to each other for joint action, substantially as and for the purpose specified.

CORK MACHINE—Albert Albertson (assignor to C. C. Bean), of New York City: I claim, first, The stationary cylinder, D d, or any substantially equivalent device, when employed to gripe a cork by its periphery so as to effectually prevent its rotation while being cut by a rotary cylindrical cutter.

Second, The feed rollers, F H H (with or without the band G) arranged and adapted to rotate a cork by friction upon its periphery, while under the action of a longitudinal cutter.

RE-ISSUES.

COFFEE-POTS—Wm. H. Elliot, of Plattsburg, N. Y. Patented January 25, 1859: I claim, first, The combination of boiler, a, still worm condenser, b, conducting plate, g, and the external opening of the still worm at g', when these devices are so arranged in relation to each other that an opening to the external air shall be provided for the non-condensible gases, while the condensible vapors are reduced to a liquid without coming in contact with the condenser water, and then turned by conductors into the boiler.

Second, The arrangement of the joint, c, below the spout, so that vapor can pass through the spout without first passing the joint, as set forth.

Third, The employment of conductors in combination with the condenser, for the purpose of filling the water joint, or keeping it full, as and for the purpose specified.

MOWING AND REAPING MACHINES—J. W. Mulley, of Amsterdam, N. Y. Patented Dec. 16, 1856: I claim, first, Connecting the frame of the platform with the frame carrying the driver and raker's seat, in the manner substantially as set forth, namely, securing the relative position of the two frames by means of the brace, J, in the rear, and the laterally inclined drawshoe in front, when the above parts are constructed and arranged as described.

Second, The shoe, k, in combination with the tongue attachment in front thereof, the said shoe being constructed and arranged substantially as described to perform the functions, as set forth.

Third, The rod, 4, and the rails, 5, connected in the manner described, in combination with the pole, N, the rocking shaft, 3, and the lever, 2, the whole being constructed, arranged and operated in the manner specified and for the purpose set forth.

Fourth, I claim the arrangement in relation to the driver's seat of the lever and mechanism connected therewith for raising and lowering the cutter bar, substantially as set forth, whereby the sickle may be raised in the manner described.

ADDITIONAL IMPROVEMENT.

MODES OF VENTILATING RAILROAD CARS—D. H. Fox and John Fink, of Reading, Pa. Patented May 8, 1855: We claim, as an improvement on our patent aforesaid, the construction of the fan chambers, D D', with outlets at each extremity, and their combination with the other portions of the ventilating apparatus, as described.

EXTENSION.

STOVES—F. L. Hedenberg, of New York City. Patented May 7, 1845: I claim the particular manner as set forth, in which I arrange and combine the flue and air-heating spaces, and the pedestal of my stove, the hot-air space being between the ascending and descending draught, the descending draught spreading around the base of the stove.

DESIGNS.

WATCH GUARDS—George Blanchart, of New York City.

STOVE PLATE—J. W. Lane, of Newton, N. J.

NOTE.—We may safely presume that there never were so many patents issued from any Patent Bureau in the world in one week, to the clients of a single solicitor, as were issued to ours during the past, ending May 10, and which will be found as above. Out of the number issued, THIRTY-TWO of the cases were prepared at the home office of the SCIENTIFIC AMERICAN, exclusive of a number which were solicited through our branch office at Washington. Some may inquire, "Can so many cases be properly prepared in one establishment per week?" Our answer to such inquiry is, that not only does each individual case receive just as much thought, time and care at our hands as if we had only six applications to prepare every week, but we are enabled to give much better attention to each case, from the fact that we are thus enabled to command the best ability and most genuine talent on such matters. Each case presented to us by the inventor is not only examined by the members of the firm, but the aid of an examiner or engineer who is specially conversant with the peculiar branch of mechanics or class of manufacture to which the invention relates, is called in, and if any difficult points arise in the preparation of the papers in the management of the case, the advice and experience of the whole examining corps is brought to bear upon it, and thus the applicant for a patent often gets the combined knowledge and talent of six or eight experienced persons in preparing his case, and no application has the attention of less than three persons in its preparation, be it ever so simple. By pursuing this system, we have won the confidence of our clients, and that we are daily adding to the number of them, each week's issue of patents satisfactorily proves.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,

No. 37 Park-row, New York.

A chemist at Lyons has discovered the means of removing, instantaneously, from the hands, the stains produced by nitrate of silver, in photography. It is simply to put linseed in the water used.

[We find the above in an exchange, and as it is likely "to go the rounds," we may save many a photographer the trouble of trying the experiment, by informing him that it is a myth, and the Photographic Society of France have contradicted it.

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New Inventions.

The Coal Trade of the United States.

During the year 1858 the coal trade of the United States increased 140,709 tons over 1857, the total being 7,733,833 tons; of these 259,885 only were imported, the remainder being from our own coal beds. In 1820 only 365 tons were traded in this country, and that was all transported by canal; now, great quantities are conveyed from place to place by railroad, and the total amount traded, and from that we may say consumed, since that period is 85,683,830 tons.

Micro-Photography.

Some English artists have become celebrated for the production of exceedingly minute photographic pictures. M. Amadia has recently taken a portrait of Dickens no larger than a pin's point, and another of Westminster Bridge and the Houses of Parliament about the size of the eye of a common darning needle. Those pictures, when magnified by a microscope, appear to be as perfect as those of the largest size. J. B. Dancer, of Manchester, England, commenced taking these curiosities of the photographic art in 1850, and several of his productions have found their way to this city. We have seen the Lord's Prayer taken on a speck no larger than the point of a common pin, and, under a magnifying glass, it appeared as perfect as if printed in *bourgeois*.

Artificial Wood.

M. Latry, of Grenoble, France, has invented a singular method of making wood hard, solid and heavy, and susceptible of the highest polish, and of a dark color like ebony. It is made by mixing very fine sawdust with bullock's blood, and then subjecting the composition to very severe pressure in a hydraulic press. With the material thus formed, all kinds of furniture and ornamental work may be made.—*Exchange.*

We have no doubt but various articles of furniture may be made of this composition, by pressing it in proper molds. The operation must be performed rapidly, as the composition will soon become very hard, and incapable of being molded. By substituting a solution of gelatine, in which a minute quantity of the oxyd of iron has been dissolved for the bullock's blood, a composition equally as good may be manufactured, and it will possess the advantage of being much lighter in the color. Indeed, it may be made of any color desired by the use of pigments. Of course, this artificial wood is not adapted to withstand exposure to the atmosphere.

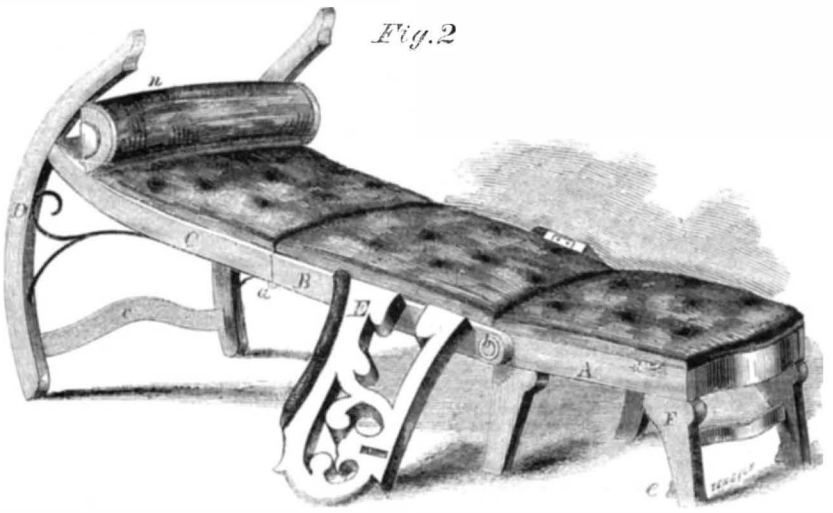
GARDNER'S LOUNGE AND CHAIR.

Improved Lounge and Chair.

The chair and lounge are essential articles of furniture, the one a comfortable rest for a sitting position, the other for a reclining one; but as few want to lie down and sit at the same time, except those who are so lazy that they wish to lie while obliged to sit, and others are obliged to sit who cannot lie from some infirmity, but who would like so to do. For all such a device which can be changed to suit the inclination of the occupant is at once convenient and luxurious. Such an one is the invention of F. J. Gardner, of Washington, N. C., which we will proceed to describe, aided by the accompanying illustrations.

Fig. 1 shows it arranged as a chair, and Fig. 2 as a lounge. A is the seat, and B the back hinged to A by the pivot, *b*, and C is a supplemental back that is hinged to B at *a*, and securely attached to the rockers, D. The rockers are perfectly independent of the legs, F, the front legs having small lugs, *e*, on them that fits on the crossbar, *c*, of the rockers, and the hinder ones having small rings in them, into which the hooks, *f*, attached to the inside of supplemental back, C, pass, and thus hold the whole securely together when arranged as a chair. The arms, E, are hinged to B, and are held firmly to the seat, A, by a small bolt on their inside passing into an eye, *d*.

A half-round cushioned piece, *n*, is placed on the top of the back between it and the



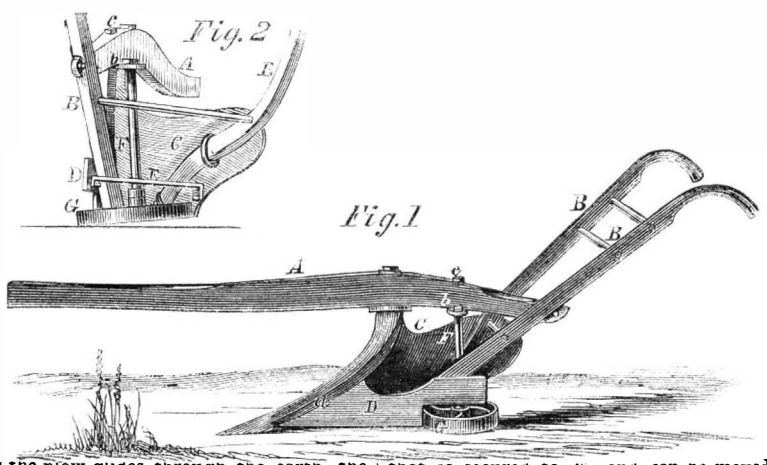
supplemental back, C, to give finish to the chair, and form a comfortable head rest.

This, it will be seen from our illustration, is a very comfortable rocking chair, solid and

substantial, without any unnecessary work, and very ornamental; the ornamentation can, of course, be left to the taste of the purchaser or cabinet-maker, and the wood chosen according to the fancy. Now, to transform this chair into a reclining chair is very easy. The hooks, *f*, are first released, and then the top piece, *n*, is taken out, after which the arms must be pulled forward and borne down upon at the same time, allowing the two parts to separate until the legs rest level upon the floor. Then raise the bolts that secure the arms, and throw the arms outward until they touch the floor, and a good reclining angle will be obtained; then by drawing the legs further out to the position shown in Fig. 2, an excellent lounge is obtained, *n* serving as a pillow. When there are no arms, a strap is provided for holding the parts in their respective positions. For the camp or tent such a contrivance as this is especially useful, and indeed it can never be otherwise than a convenient article of furniture, for in it we have a rocking chair, a reclining chair and lounge or bed, the three in one.

It was patented January 25, 1859, and the inventor will be happy to furnish any further information upon being addressed as above. An advertisement concerning it will be found in another column.

WILLIAMS' IMPROVED PLOW.



As the plow glides through the earth, the draft is materially increased by the friction of the land side and mold-board; in the invention which is the subject of our illustration, this is sought to be obviated in a great measure, and also a means supplied of regulating the plow, so that it will form furrows of greater or less depth as may be required.

Fig. 1 is a side view of the plow, and Fig. 2 an end or back view of the same.

A is the beam, and B B are the handles; C is the mold-board and D the landside, which is secured to the mold-board at *a*, receding a little, so as not to be quite flush with the front of the mold-board. At the back of C and D, and secured to both of them, a slotted bar, E, is placed, and to the beam, A, a curved slotted bar, *b*, is attached by a pivot, *c*.

The outer end of the bar, *b*, forms a bearing for the upper end of a shaft, F, the lower end of this shaft having its bearing in a block that is secured to E, and can be moved in the slot by a screw. The upper end of F can also be adjusted by moving the bar, *b*, by its slot, through which the pin *c*, passes, that attaches it to the beam. On the lower part of F a wheel, G, is placed. F is inclined, so that the wheel, G, will not be in a horizontal plane, but will have its front part lower than its back.

The operation is as follows:—As the implement is drawn along, the front part of the sole, that is, the underside of the share runs on the ground at the bottom of the furrow, and the edge, *a*, of the mold-board bears against the landside of the furrow in connection with the lower side of the wheel, G. The landside, therefore, does not touch the landside of the furrow, and the wheel, G, prevents a great deal of friction, and also by its lower side bearing on the ground at the bottom of the furrow, the sole of the mold-board and landside are prevented from bearing on the furrow also, so that the wheel. G, rotates and diminishes friction in two ways. The shaft, F, being adjustable, the wheel, G, can be adjusted laterally to project more or less beyond the outer side of the landside, and thereby gage the width of the furrow as desired. For instance, if a wide furrow is required, G is moved and adjusted to the left in order to throw the point of the share towards the land, and when a narrow furrow is required, the wheel is adjusted in the opposite direction. The invention is very simple and of eminent utility, and it will not materially increase the cost of the implement to which it is applied. Any further information can be obtained from the inventor, S. Williams, Jr., Mill's Mills Post Office, N. Y., and who obtained a patent March 8, 1859.

Iron Gunpowder.

In the year 1850, Mr. March, an able chemist connected with the Royal Arsenal, discovered that it is an invariable rule with iron which has remained a considerable time under water, when reduced to small grains, or an impalpable powder, to become red-hot, and ignite any substances with which it comes in contact. This he found by scraping some corroded metal from a gun, which ignited the paper containing it, and burnt a hole in his pocket. The knowledge of this fact is of immense importance, as it may account for many spontaneous fires and explosions, the origin of which has not been traced. A piece of rusty old iron brought in contact with a bale of cotton in a warehouse or on shipboard may occasion extensive conflagrations, and many lives. It ought to be added that the tendency of moistened particles of iron to ignite was discovered by the great French chemist, Lemary, as far back as the year 1670.

A correspondent sends us the above item, and asks our opinion on the subject, being a really important one. It is perfectly possible that iron when reduced to an infinitely fine powder may have such an affinity for oxygen as to unite quickly, and produce great heat; but we think that this is an occurrence seldom likely to take place, for as the iron would combine with oxygen gradually as it became in a state of powder the heat could scarcely be developed after. All the metals, not precious, decompose water more or less rapidly, and that develops heat, so that although such an accident is possible, in our opinion, it is by no means probable, as iron could not be got fine enough without oxydation to absorb oxygen sufficiently to develop red heat.

Pump for Australia.—Since the publication of the letter of Messrs. Fisher, Ricard & Co., on page 35 of the present volume of the Scientific American, in which they set forth the wants of Australian miners, we have received a large number of letters, each offering for our consideration a plan of pump to meet the wants specified. It is not our intention to recommend any of the correspondents who apply to us to take out patents for their alleged improvements, on the contrary we advise them not to incur this expense at present; and we would further state for their guidance that it is impossible for us, without a knowledge of all the more important details to advise our correspondents respecting the practicability of their plans. We published all the information we received for Messrs. Fisher, Ricard & Co., and our readers who feel interested should open a correspondence with the parties themselves, as we can afford them no satisfaction.

Cure for Sprains.—In the Paris hospitals a treatment is practiced that is found most successful for a frequent accident, and which can be applied by the most inexperienced. If the ankle is sprained, for instance, let the operator hold the foot in his hands, with the thumbs meeting on the swollen part. These having been previously greased, are pressed successively with increasing force on the injured and painful spot for about a quarter of an hour. This application being repeated several times, will, in the course of the day, enable a patient to walk, when other means would have failed to relieve him.

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Scientific American.

NEW YORK, MAY 21, 1859.

Benefit of Steam Jackets.

The steam which enters the cylinder of an engine radiates considerable heat, and a portion of it is thus condensed into water. All this is dead loss, and to avoid it, James Watt first applied what is called a *steam jacket.* This consists in casting the cylinder of an engine with an outer casing, and leaving a space between, for the admission of steam from the boiler, so as to keep the steam in the cylinder at the same temperature throughout the whole length of the stroke of the piston. The outside case or jacket is also enclosed with staves of wood and several layers of felt. Very few American engines have steam jackets, but all Cornish engines have them, and their economy in doing duty with a certain amount of fuel is well known. Many engineers of high reputation have argued against the use of the steam jacket; they have said that "the steam jacket itself is subject to radiation as well as the cylinder, and as it has a far more extended surface, more steam must be condensed in it than in the cylinder alone; therefore its use is a disadvantage, not a benefit." This is plausible reasoning, and the only arguments which can be presented against it are plain facts, which are "sturdy things that cannot be refuted." If it can be established that steam jackets are economical, every steam-engine should have one, or an equally efficient substitute.

Bourne, in his elementary treatise on the steam-engine, says:—"In Cornwall, where great attention is paid to the economy of fuel, all the engines are made with steam jackets, and in some cases a flue winds spirally round the cylinder for keeping the steam hot. Mr. Watt, in his early practice discarded the steam jacket for a time, but resumed it again, as he found its discontinuance occasioned a perceptible waste of fuel; and in modern engines it has been found that where a steamjacket is used, less coal is consumed than where the use of a jacket is rejected. The cause of this diminished effect is not of very easy perception, for the jacket exposes a larger radiatory surface than the cylinder, nevertheless the fact has been established beyond doubt, by repeated trials, that engines provided with jackets are more economical than those without them." This is the testimony of a foreign author on the steam-engine towards establishing the conclusion that steam jackets are economical, and we will now present evidence from an American engineer to the same purpose.

In a communication to the "Journal of the Franklin Institute" for this month, Mr. Gordon Mackay, of Paterson, N. J., details a series of experiments with a small model engine and boiler, the former having a steam jacket which could be placed in communication with, and cut off at pleasure from the boiler. The power of the engine was accurately tested with a dynamometer; the water correctly weighed, and every precaution taken to render the experiments reliable. The first was made with the steam admitted to the jacket of the cylinder; the condensed water being returned from it by a special tube to the boiler. The pressure in the boiler was 115 pounds, the initial pressure in the cylinder 95 pounds, and the final 17 pounds above vacuo. The experiment was continued for eight hours; the number of revolutions was 97,440; the total water evaporated 500.7 pounds, of which 15.7 were condensed in the jacket; the rest passed through the cylinder, and the power of the engine developed was one horse. The second experiment was conducted by shutting off the steam from the jacket; its duration was eight hours also; the pressures of the steam were the same, as were also the revolutions and the amount of power developed. The water evaporated by the boiler, however, to produce the same amount of power in both cases was no less than 630 pounds in the latter—a difference of 129.30 pounds in favor of the steam jacket. To account for this gain, Mr. Mackay believes that the *sensible* heat of the steam is taken up in the cylinder to maintain its working temperature, while in the jacket it is the *latent* heat which performs the office. This appears to be a good theory; but whether true or not, the experiments themselves are valuable and afford proof that a saving of more than 20 per cent can be effected by the use of steam jackets on the cylinders of non-condensing as well as condensing steam engines.

Honors to Josiah Wedgewood.

From a late number of the *Art Journal*, of London, we learn that the British people are about to erect some lasting memorial to the memory of this great man, whose name is a household word in every land where crockery is used. But, unfortunately, there are two parties to the scheme—one thinking that an educational institute, with an Art school attached, would he most fitting, and the other holding to the opinion that a statue would be most flattering to his memory. Had there been unanimity in the camp we should have been silent, but as difference of opinion exists, we wish to throw out a suggestion—one that comes to us from an Americau point of view. We are not ashamed to confess that we think Art has a deeper meaning than the portrayal of the beautiful in form and color. To us it meaus the spread of good taste and the appreciation of the true, not among or by the cultivated and rich alone, but among and by the untutored and poor. Feeling this deeply, and earnestly wishing that Art may quit collections and make the humblest dwelling its home, we would ask the gentlemen who feel that it is time to honor the memory of Wedgewood if the following would not be a suitable and world-wide tribute to his manes: Let them offer a high premium for a design combining elegance of form, harmony of color, and grace of outline, which could be made into plates, dishes and saucers, and another that could be formed into pitchers, and a third that would form tea-cups, basins and the like. Let them send a pattern to every pottery in the world, and let it be known as "the memorial ware." The colors must be few, for cheapness is the greatest consideration of all, in order that it might be widely diffused; and this, we think, would be of more real value to the world than any statue or local work, and would be perpetuating, in a higher degree, the work that Wedgewood in his life tried to further. It is really a matter of regret to any one who believes in the elevation of popular taste, to see the miserable abortions, in the way of form, that are sold as crockery, surrounding people from their earliest childhood with bad models from which to form their standard of artistic excellence, when the material in which they are produced is capable of such graceful curves and truthful molding.

It may, to many, seem a small idea to perpetuate and honor a man in a tea or dinner service; but if that set of dishes, plates, jugs and cups has but a tithe of influence for good that the willow pattern of England or the dead-dirty-bluish-white of this country has had for evil upon the taste of mankind, then will it be a true and fitting tribute to a great man's name. Let the Staffordshire people think of this, and, giving up the statue, found an Art school for the express purpose of improving the form, color and cheapness of the commonest crockery. The world wants nothing old, but something distinctive and original, that shall teach the workman at his meals and preach its humanizing sermons from store windows; that shall call forth a blessing from the weary wayfarer and comfort the discontented soul with its teachings of pure Art. This is not a little work but a great one, aud one in which we hope soon to see our own manufacturers engaged.

Schaefer's Pump.

The pump, one of the most useful of all inventions or discoveries, was known very long ago, it having been invented by Ctesibius, a mathematician of Alexandria, about 120 years before the Christian era, in the reign of Ptolemy, King of Egypt. In the crowd of improvements which daily throng themselves upon the attention of the patient and investigating mind, the name of Ctesibius is forgotten, and it is well, now and then, when introducing a new improvement, to remind the reader of the first discoverer's name.

The improvement which is the invention of L. B. Schaefer, of 213 South Ann street, Baltimore, Md., and which forms the subject of our illustration, is designed to give a greater length of stroke to the piston with the ordinary motion of the hand lever. Fig. 1 shows it applied to a common pump, and

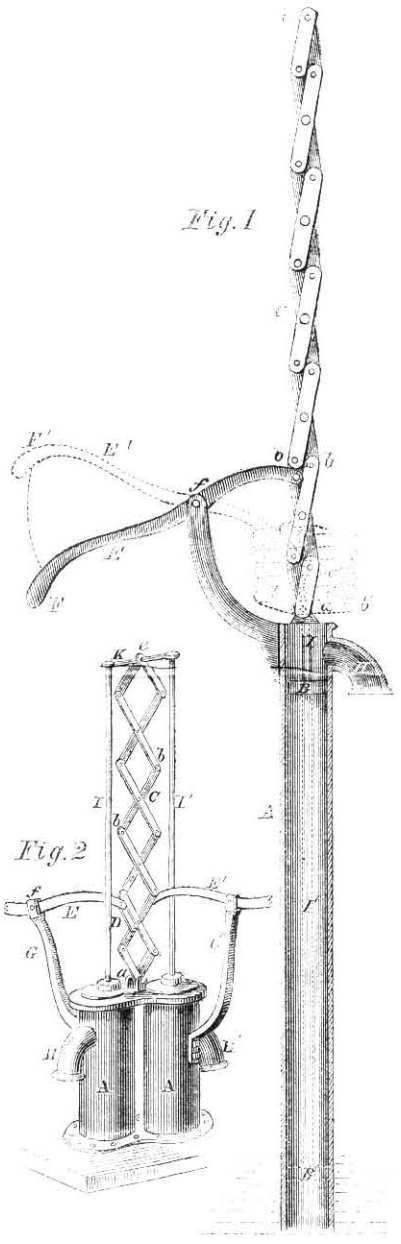

Fig. 2 to ship's pumps. To the upper end of the pump-barrel, A, au arm, G and G′, Fig. 2, is firmly attached, which serve as fulcra for the hand levers, E and E′, and handles, F and F′. Where two pump-barrels are combined (as shown in Fig. 2), the top plate, which covers both barrels, is provided in the center with projection, *a*, to receive the first pair of links of the shear lever, C, but when only one pump-barrel is used, Fig. 1, this projection, *a*, is cast one side of the barrel. The pin which forms the first crossing-point of the shear lever, C, above the projection, *a*, is united with the levers, E and E′, by means of the link, D. This link, D, secures a vertical motion of the pin, and therefore of the shear lever itself, while the levers, E and E′, are turned around their fulcra, *f*. The uppermost end, *e*, of the shear lever, C, is united with the two piston rods, I and I′, by the cross-bar or rod, K, which serves at the same time as a fulcrum for the last two links of the shear lever. In Fig. 1 the lowest position of handle, F, which causes the highest position of the point, *e*, of the shear level, and therefore also of the piston, B, is shown in clear lines, while the highest position of the handle, marked F′, causes the end of the shear lever to move down to *e*, and also the piston, B, to take the position marked B′. This position is drawn in dotted lines. From this it will be seen that while the handle of the lever, E, moves through the distance from F to F′, the piston, B, of the pump is caused to move the distance from B to B, the piston rod, I, being indicated when down its full distance by I′. This distance, B B′, through which the piston moves may be increased or decreased, and depends merely on the number of links which constitute the shear lever. It is evident that the quantity of water discharged by a pump at every stroke of the piston, depends only on the distance traveled by the piston, and also on the diameter of the pump-barrel. The distance traveled by the piston of a pump, constructed in this manner, is at least six times greater than that made by the end point of the lever, E, which is equal to the space traveled by the piston of a common pump, and, therefore, with a pump of this construction, with an equal number of strokes, or in the same time, six times the quantity of water more than by a common pump of the same dimensions will be discharged. The space occupied by these pumps is not more than the ordinary ones, and where, as in a ship, the labor is, in a moment of peril, not of much consequence, they will prove very valuable, and no doubt aid greatly in the saving of human life.

This ingenious and practical invention was patented March 22, 1859. An operating model may be seen at Simon's Hotel, Baltimore, and the inventor will be happy to furnish any further information upon being addressed as above.

Death of Professor Olmsted.

Denison Olmsted, LL.D., Professor of Astronomy in Yale College, died at his residence in New Haven on the 13th inst., in the 68th year of his age.

The *Evening Post*, in speaking of the sad event, truly says:—"His surviving college mates, and forty classes of his pupils, with the unnumbered teachers and readers of his scientific works, will peruse this notice with the profoundest sorrow, and sympathize with his bereaved family. Professor Olmsted was graduated at Yale College in the last class taught by President Dwight; and from that time to the close of his life (with the exception of a few years passed at the University of North Carolina,) he has been an active, able and successful teacher of science in the same institution. His last winter's course of lectures is spoken of at New Haven as the most full and brilliant of any delivered in the course of his long and useful life. The exhaustion which followed these labors aggravated the habitual infirmity of his constitution, and brought on the acute neuralgia under which he sunk. The scientific labors and writings of the professor have been prominently before the public during the period of nearly 40 years, since he undertook the geological survey of North Carolina; and his books have been the source of a large income, which enabled him to make his beautiful home at York Square the seat of hospitality to the vast circle of literary and scientific men which is habitually found at New Haven. His garden and grounds, we learn from a friend, were blooming in their richest luxuriance the morning of his death, unconscious that the hand which had long tended them was finally withdrawn, and that the eye which had so lovingly watched them was closed forever. His family cannot yet realize the desolation which must follow his removal from a home lately so full of light, and joy, and happiness. But they have the rich and enduring solace of his life-long care and counsel, his well-earned reputation, and his last words, 'all is peace within.' Professor Olmsted was one of the most accomplished and best known of our men of science. He was a member of many of the scientific institutions of this country as well as of Europe, a large contributor to the various scientific periodicals, a voluminous author, and both as a teacher and a man universally beloved."

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Charles M. Keller and the American Patent Office.

MESSRS. EDITORS: In your issue of the 16th ult. Mr. Keller is spoken of as a boy in the Patent Office, who was "sweep, duster, porter, door-keeper, tinkerer, and jack-of-all trades," &c. Permit me to say that this statement is incorrect. Mr. Keller was not the "messenger." His father had charge of the "model room;" and young Keller rendered no services but such as were voluntary, as he was there without appointment, salary, or duties of any kind.

The elder Mr. Keller swamped his fortune in the attempt to establish in this country a branch of manufacture which, in the early part of the year 1816, he had brought with him from France. His familiarity with the progress of invention, and his accurate mechanical knowledge, led, as above stated, to his appointment in 1822, by John Quincy Adams, then Secretary of State.

On the death of his father in 1829, young Keller, though still a minor, was appointed to the vacancy. In the year 1834, Mr. Pickett, of Kentucky, afterwards appointed Fourth Auditor of the Treasury, succeeded Dr. Craig as Superintendent of the Patent Office. The act of 1793 being to grant patents for discoveries and inventions, "new," &c., and the practice of the Office seeming to be in violation of the spirit of the act, for want of a proper officer in the department charged with the duty of determining "novelty," young Keller suggested to Mr. Pickett the propriety of causing the practice of the Office to conform to the spirit of the law. The intimate knowledge of domestic and foreign inventions by this acquired by Mr. Keller from his position in the Model Department, induced Mr. Pickett to assign to him the new duty of advising applicants as to novelty or want of novelty in their inventions. In 1835 Mr. H. L. Ellsworth succeeded Mr. Pickett. By this time young Keller had still further matured his ideas, and as soon as the new Superintendent was fairly in working order, he ventured to submit for his consideration not only a plan for re-organizing the department itself, but also a project of law. Mr. Ellsworth was a man of too noble a nature to reject the plan merely because the suggestion came from a subordinate, and too liberal and comprehensive in his instincts and his intelligence not to see the beneficial workings of the project and the plan, both for inventors generally and for the Office itself. It is needless to add that this gentlemen addressed himself to the work of reformation with his accustomed and natural zeal of character.

The Hon. Judge Ruggles, of Maine, was Chairman of the Senate Committee during the session of 1835-6. But for his untiring exertions in the work, inventors might, perhaps, have, to this day, remained in their former comparatively unprotected condition. Stimulated by the condition of the Office and the inefficiency of the laws, as portrayed by the young but earnest Examiner-inchoate, Mr. Ruggles worked unceasingly during the whole of that (to inventors) memorable session. As one of the class who are reaping the substantial and practical benefits of the Act of 1836, I feel a peculiar pleasure in being able to publicly express my acknowledgements to the man who suggested and to those who co-operated in perfecting the reform. In my view, this part of the "History of the American Patent Office" is of especial interest to inventors, and the men who were instrumental in accomplishing so important a work ought never to be forgotten.

In the nightly intercourse and interchange of opinions between Judge Ruggles and the subject of this notice, incident to the work of reform during the session of 1835-6, the young machinist acquired his first taste for, and lessons in that science which he has since so signally adorned.

After the passage of the new law, and under the new *regimé*, Mr. Keller was the first appointed Examiner. In his subsequent position as Examiner-in-Chief of the Department, his talents, industry and fidelity have left a record which any man might well be proud of, and which his successors may safely imitate. In May, 1845, against the earnest remonstrance of the Commissioner, Mr. Keller resigned his position in the Patent Office to enter upon a new but more extended sphere of usefulness. As an advocate in patent cases I believe there is but one opinion of his talent; and as a man, they who know him best are best fitted to pronounce his eulogy.

I am yours, very truly,

THADDEUS HYATT.

New York, May 9, 1859.

Tempering Steel Tools.

MESSRS. EDITORS:—There are some facts in the hardening, tempering and heating of steel articles and tools that are not commonly known or attended to. All workers in steel are, very properly, more or less careful not to injure it by over-heating; but it may as certainly be deteriorated by a too-long continued or a too-often repeated moderate heat. Good new steel, when broken, will exhibit an uneven splintered fracture, which indicates toughness. This quality, by a repetition of moderate heats without hammering, or a prolonged heat (as in annealing), will, in a marked degree, disappear, and the steel is now without body—not brittle, but rotten.

I presume it is well known to machinists that a drill becomes worthless if several times hardened and tempered without forging. The effect can be seen in the discoloration of the grain, its appearance being muddy and dead, and lacking the peculiar gloss and splintered texture of tough steel. In the hardening and tempering of thin saws the influence of time, as well as temperature, is often forcibly illustrated. For example, hand-saws will bear their teeth set at a given temper, but if (as sometimes happens) the saw is not sufficiently heated to harden when dipped in the bath, and it has to be re-heated, it will require to be drawn to a softer temper to admit of being set without breaking the teeth. The same pernicious effect occurs when the heat of the furnace is too low and requires extra time, and in a still greater degree if the saws are exposed to the flame of soft coal. It has been found that the toughness of the saw is in a direct ratio with the quickness of the heat and the clearness of the fire.

It is erroneously supposed by many persons that some sort of virtue is imparted to steel by being hardened in specific baths. With the exception of files and sheet-steel, clear water is the best hardening medium for about all kinds of tools. If the tool is of a slender form the water should be heated to about 100° Fah., to prevent warping. Forged tools have their surfaces brightened to remove the scale before heating; they will then harden at a low heat and more regularly, and, as a consequence, will not be so liable to warp. For sheet-steel or small delicate tools, a bath composed of 1 gallon of fish-oil and 1lb. resin, and made warm for use, is as good as or better than a more mysterious compound. It will strip off the scale of the steel and make it harden uniformly and moderately, which is all that is required. Steel hardened in this liquid is of about the same degree of temper, without drawing, as it would be if drawn to a deep straw color after dipping in water; and this should be allowed for accordingly in fixing the temper.

WM. CLEMSON.

East Woburn, Mass., May, 1859.

[Our correspondent is a practical mechanic of great experience, who has personally hardened more than 500 tons of steel during the past ten years. The deleterious effects of long continued low heat on steel, in tempering, so far as we now remember, has never before been presented through our columns. It is a practical fact of much importance, and was discovered by Mr. Clemson in a series of experiments undertaken to make the best quality of wood-saw. He thought that if he took more time than was ordinarily allowed in heating the steel, he would produce a superior temper; but instead of this being the case, saws made of the best steel, and submitted to long low heat, were not so good as those made of common steel—they would not set at so high a temper. A rod of $\frac{3}{8}$-inch steel, forged down to about 12 of the wire gage, is much stronger than steel wire of the same size; the several annealings to which the latter must be subjected greatly injures its strength.—EDS.

Gutta-percha for Submarine Cables.

MESSRS. EDITORS:—In some recent numbers of your paper there were communications on gutta-percha as an insulator for submarine telegraph wires. I had a cable 47 miles above New Orleans, and the gutta-percha casing, both outer and inner, cracked in the manner described by Mr. Norris, and it stopped communication, of course. There were no iron wires covering it, but before I laid it down I wrapped it in tarred canvas. The canvas in the water soon rotted off, but that part of the cable above the water was sound and did not crack; so that a covering of tarred canvas, when practicable, will prevent the cracking. I may state that a small piece of the cable which was not covered did crack badly. Your latest correspondent cries out against condemning the best insulator we have, and he seemingly deprecates saying anything against it. Now, I think it much better that every man should give his experience, so that the faults may be guarded against. Though I found that gutta-percha would crack in the water, I was far from condemning it; for I laid another and better cable in place of the bad one, and I also laid a cable during last fall across the Tombigbee River, near Columbus, Miss., where I could have erected a mast for the cost of the cable, but I preferred the latter.

Very respectfully, your obedient servant,

D. FLANERY.
Supt. of N. O. & O. Tel. Lines.

Jackson, Miss., April 4, 1859.

Inquiry About Gunpowder.

MESSRS. EDITORS:—Please to inform me, through the columns of your valuable paper, how long gunpowder will retain its properties provided it is kept in a proper vessel? I have now in a my possession a quantity of gunpowder which I bought twenty-three years ago; at that time it might have been manufactured some years. Will it gain or loose in quality by age? As these are important questions, some records may exist on this subject.

Very respectfully,

L. R. B.

New York, May 2, 1859.

[Gunpowder, if kept in a suitable vessel, perfectly dry and carefully protected from the hygrometric changes of the atmosphere, will keep for any length of time without deteriorating. In all the arsenals of Europe they have some old gunpowder which is undistinguishable from new.

American Steamboats in Scotland.

At a late meeting of the Glasgow Philosophical Society, a paper was read by Mr. J. Downie, on constructing steamboats for the Clyde, provided with the spacious and comfortable accommodations of the American river boats. Some of the members objected to the top cabins of our boats, and asserted that they would not answer for the high winds and frequent storms on the Scottish coast, but all admitted that a reform was necessary in their boats, and that they must combine the American system, if they wished to increase the comfort of the passengers. Improved ventilation, a promenade deck, and more space were required, and the American steamers in regard to these improvements were models to copy after. At the same time, most of the members thought that the hulls of such boats should be made of thin steel plates, a material which is now coming rapidly into use in England for such purposes.

Under Brain-work.

Overwork of the brain, against which we hear so many people cry, and which we hear so many cosy-looking men deplore very complacently in their own persons, is not by a good deal so dangerous as under-work of the brain, that rare and obscure calamity from which nobody is supposed ever to suffer. The Rev. Onesimus Howl drops his chin and elevates his eyes, upsets his digestion with excess of tea and muffin, and supports, upon the doughy face he thus acquires, a reputation for great strain on the brains caused by the outpouring of a weekly puddle of words. His friends labor to prop up his brain with added piles of muffin. Paler becomes his face and more idiotic his expression, as he lives from New Year's-day to New Year's-day rattling about in his empty head the few ideas of other men he has contrived to borrow, and tranquilly claims all the sweets of indulgence on account of the strain put upon his wits. Dr. Porpice is wheeled about from house to house in his "brougham," and prescribes his cordials and his mild aperients; treats, by help of what knowledge gathered from a past generation may happen to have grown into his habit of practice, all the disease he sees; now and then turns to a book when he is puzzled, but more commonly dozes after dinner. Yet very gladly does the doctor hear the talk about immense strain on his mind, large practice, great responsibility, and the wondering that one poor head can carry all he knows. He seldom passes a day without having taken care to confide to somebody that he is overworked. Once a week, indeed, if his practice be large, he may be forced into some effort to use his brains; but that he does really exercise them once a week, I am not certain. The lawyer elevates his routine into a crush of brain-work. The author and the merchant flatter themselves, or account themselves flattered, by an application to their labors also of the same complimentary condolence. The truth is, that hard work of the brain, taken alone—apart from grief and fears, from forced or voluntary stinting of the body's need of food or sleep, and the mind's need of social intercourse—does infinitely more to prolong life and strengthen reason in the workers than to cut or fray the thread of either. Men break down under the grind of want, under the strain of a continuous denial to the body of its half-a-dozen hours a day of sleep, its few necessary pounds of wholesome food, and its occasional exercise of tongue and legs. If an author spends his whole life in his study, his mind fails under the pressure of the solitary system. If a great lawyer refuses himself month after month the necessary fourth part of the day for sleep, he wears his brain out, not by repletion of study, but by privation of something else. Under all ordinary circumstances no man who performs work for which he is competent is called upon to deny himself the first necessaries of life, except during short periods of encroachment which occur to men in every occupation, and which seldom are of long duration, and can almost invariably be followed by a period of ease sufficient for recovery. Healthy men, who have bed and board assured them, while they can eat, sleep, stir, and be merry, will have sound minds, though they work their brains all day, and provide them for the other five or six hours with that light employment which is the chief toil of Dr. Porpice or the Rev. Onesimus.

[We copy the above from Dickens' *Household Words*. It is a pretty sharp method of pushing home truth and sound philosophy, and we doubt not as respects the English clergy the case of Onesimus is not a rare one. Many of these "rectors" are well fed and sleek, and having the enjoyment of a "living," are not so likely to be concerned about their meat and drink as are the clergy in this country who have not the aid of the state to support them. The clergy here, as a class, are generally hard-thinking, laborious men. The philosophy of this, however, is sound.

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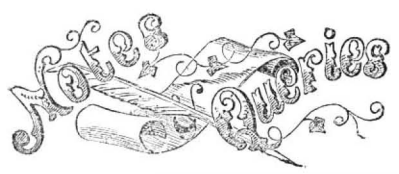

*** PERSONS who w ite to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

WE are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

J. J. W. A., of Md.—The "cheapest artificial stone" which we know of is made by mixing sand and lime together, then molding it like brick, and allowing it to dry.

F. D., of N. J.—Any of the resin gums dissolved with turpentine will paste labels on tin. Lac or a copal varnish will answer your purpose.

W. & P., of Pa.—James Bogardus, of this city, manufactures mills capable of grinding sand and any other refractory substance.

J. W., of Iowa.—Pure white lime, with about one ounce of dissolved glue to the gallon, is the best whitewash for the interior of houses. For an outside whitewash, add one ounce of salt to the gallon of lime and half a pint of sweet milk.

M. W., of Ga.—The only novelty in your ferry propeller is the arrangement for shifting it to let vehicles pass. There are steam ferries in England on which a cog-wheel, arranged in the center of the boat and driven by a steam-engine, picks up a chain whose ends are fastened to both shores. One of this kind runs across Portsmouth harbor between Portsmouth and Gosport.

R. H. S., of N. C.—It is supposed by some persons that the mouth of the Mississippi is higher than its source, because of the increased diameter of the earth toward its equator. If this were true, of course the river would be running up hill, a feat which the "father of waters" is scarcely able to execute, we think, without employing a force pump of considerable dimensions.

C. L. W., of Fla.—No distinct work has ever been issued devoted to the history of rotary steam-engines. In Vol. IV. of the SCIENTIFIC AMERICAN, which we are unable to supply, you will find an excellent history of this class of engines.

E. A., of S. C.—To "run the gauntlet" is to walk between the lines formed by a regiment of soldiers consisting of 3,000 men, each man striking the culprit with a rod, a treatment not at all agreeable.

A. A. W., of N. Y.—In Vol. IV. of the SCIENTIFIC AMERICAN, page 192, you will find an illustration of a rotary steam-engine exactly like yours. We cannot recommend it.

D. R., of N. C.—We do no not know the address of any one engaged in the manufacture of common bottle glass. By addressing H. J. Baker & Bro., of this city, you can probably ascertain.

C. F., of Ohio.—Applications for the extension of patents must be made before the original term expires. All needful information upon this subject you will find in No. 32 of the present volume of the SCIENTIFIC AMERICAN.

J. M., of N. Y.—We overlooked the notice to which you refer. Address Secreta y, Society of Arts, London.

W. C., of Ind.—You ought by all means to have your improvement illustrated in the SCIENTIFIC AMERICAN. It goes among the very class you want to reach—mechanics and manufacturers—and circulates in every State in the Union. We are glad to know that you propose to get us a club of subscribers for the new volume. We will send you a prospectus for the purpose of getting up your list.

H. K., of Mass.—The question of the potato rot was discussed by us at the close of the last volume, and unless some very novel views are brought forward we are not prepared to enter the arena again,

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Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, May 14, 1859:—

D. C. S., of N. Y., $25; W. D. T., of N. Y., $25; R. F. W., of N. H., $30; J. R. R. M., of Ill., $25; H. B., of N. Y., $20; T. P. M., of N. J., $25; D. B. R., of Ill., $30; D. W., of L. I., $5; H. K. S., of Mass., $30; W. R. L., of Conn., $25; B. B., of N. Y., $30; J. G. S., of N. Y., $25; B. T. C., of Me., $55; L. H. C., of N. Y., $25; G. S., of L. I., $27; W. S. S., of N. Y., $30; I. S., of Ill., $25; R. E., of N. Y., $10; W. B., of N. H., $70; A. S., of N. Y., $40; H. & T., of N. Y., $25; C. F., of O., $312; T. J. G., of R. I., $25; J. P., of N. H., $25; C. P. G., of Ill., $30; A. A., of Vt., $10; J. H. G., of O., $30; E. A. S., of Pa., $25; W. G. W., of Mass., $30; V. R. D., of Ill., $30; W. H. D., of N.Y., $25; J. L. B., of O., $25; J. G., of N. Y., $25; G. K., of N. Y., $10; P. D., of R. I., $55; C. & J. K. G., of Pa., $50; W. L. G., of N. Y., $25; J. W. S., of Me., $30; E. P. B., of O., $30; G. VanC., of N. J., $25; W. S. H., of N. Y., $30; L. R. W., of R. I., $55; M. & R., of N. Y., $160; P. W. G., of Ill., $34; A. B., of Ill., $30; C. L., of Cal., $55.

Specifications drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 14, 1859:—

J. G. of N. Y.; I. S. of Ill.; D. H. of Ill.; D. W. of L. I; H. & T. of N. Y.; W. H. D. of N. Y.; E. A. S. of Pa.; J. G. S. of N. Y.; B. D. of N. J.; B. S. C. of N. Y.; W. S. S. of N. Y.; J. P. of N. H.; G. S. of L. I.; W. R. L. of Conn.; P. D. of R. I.; W. H. R. of N. Y.; J. L. B. of O.; D. & D. of N. Y.; D. C. S. of N. Y.; T. P. M. of N. J.; M. R. F. of N. Y.; C. P. G. of Ill.; J. R. R. M. of Ill.; W. D. T. of N. Y.; A. M. of La.; W. L. G. of N. Y; G. VanC. of N. J.; A. S. of N. Y.; T. J. G., of R. I.

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Yours, very truly, CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

MESSRS. MUNN & CO.—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant.

J. HOLT.

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REMARKS.

Patent Reports kept on hand, to which the public can at all times have access. All who have valuable inventions, and not the means to bring them out, and those who have patents that are infringed upon by others, are especially invited to call. Manufacturers can here advantageously exhibit specimens of their goods on the above terms, and should they wish our services, we will act as agents for a reasonable commission. Having a hall for exhibition (150 by 40 feet) in the center of all business, and agents in every section of the country, our facilities for negotiating patents cannot be surpassed. Pamphlets containing a list of Patents on exhibition and for sale, will be sent to any one, on the receipt of six letter stamps. Persons who send Models, &c., must in all cases prepay transit expenses, and mark their packages:—"Inventors' Exchange, 37 Park Row, New York City." And when they desire answers, will enclose a letter stamp.

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HARRISON'S 20 AND 30 INCH GRAIN Mills constantly on hand. Address New Haven Manufacturing Co., New Haven, Conn. 27 13

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CORLISS' PATENT STEAM ENGINES—On application, pamphlets will be sent by mail containing statements from responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. (The "James' Steam Mills," Newburyport, Mass., paid $19,734 22, as the amount saved in fuel during five years. The cash price for the new engine and boilers was but $10,500.) These engines give a perfectly uniform motion under all possible variations of resistance. Two hundred and fifty, varying from about 20 to 500-horse power, are now in operation. Boilers, shafting, and gearing.

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OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.

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IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 27 13

HOYT BROTHERS, MANUFACTURERS OF patent-stretched, patent-riveted, patent-jointed, Oak-Leather Belting; Store, 28 and 30 Spruce street. Manufactory, 210, 212, 214 and 216 Eldridge st., New York. A "Treatise on Machinery Belting" is furnished on application, by mail or otherwise—gratis.
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LARD OIL MANUFACTURERS—MESSRS. WM. SKENE & CO. manufacture purified Lard Oil of the best quality, for machinery or burning, in Bullett st., four doors below Main, Louisville, Ky. 25tf

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A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence.

MUNN & CO. Scientific American Office, 37 Park Row, New York.

Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an

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Science and Art.

Improvements in Fire-Arms.

We shall look with some anxiety at the coming (or present) war in Europe, to note the effect which the inventor's genius and the discoverer's toil has had upon military tactics and the certainty of death in battle; for during late years, fire-arms of all descriptions have been so improved as to almost make war mean annihilation, if the improvements are adopted by the contending armies. America, perhaps more than any other nation, has produced inventions in weapons of offense and defense, and they will no doubt be largely used in the European struggle.

We have to chronicle two important inventions of J. Rupertus, of Philadelphia, Pa., of which he has assiged half to John Krider and J. T. Siner. The first was patented April 19, 1859, and is an automatic primer for fire-arms. In it a magazine is provided for percussion caps or pellets within the hammer of a fire-arm. A feeding slide is applied to the hammer and its contained magazine, which is operated as the hammer falls, causing a cap or pellet to be delivered from the magazine in front of the face of the hammer, and so interposed between the hammer and nipple as to be exploded by being driven by the hammer into contact with the nipple or surface surrounding the vent. In the invention there is also a mode of operating and applying a piston to push forward the caps remaining in the magazine after every delivery made by the feeding slide, whereby the inventor is enabled to obtain the greatest length of magazine that the size of the hammer admits of.

The second was patented last week, and the claim will be found on another page of this paper. It relates to that description of revolving fire-arms which have the many-chambered cylinder rotating on an axis parallel with the bore of the barrel, and consists in what the inventor terms a "safety tube," that serves to convey the fire from the priming to the several chambers, to prevent any escape of fire in a lateral direction from the vent of one chamber to that of the next, and the consequent accidental discharge of any of the chambers, and to lock the cylinder with its chambers in line with the barrel. There is also a certain means whereby the necessary movements of the safety tube are effected by the movements of the hammer; and there is a new method of supplying percussion caps or priming from a magazine or stock to the point where it is required to be exploded to fire the charges in the chambers.

Hobbs' London Lock Factory.

The celebrated lock-picker, Mr. Hobbs, who astonished our English friends during the Great Exhibition in 1851, by picking Chubbs' and all the other celebrated London locks, has found it a profitable business, we understand, to carry on the manufacture of American locks in London, where he has resided for the past eight years. He has a large factory in operation, and has introduced machinery for making various parts of locks which have heretofore been made by hand. This has given him a great advantage over those who pursue the old jog-trot hand labor system. In introducing his machinery for this purpose, Hobbs had to proceed very cautiously, so as not to raise the ire of the dusky operatives; he therefore enclosed his factory, and got all his machinery in order before he commenced operations, and then went along like a streak of American lightning. His locks have acquired a high reputation, and he appears to be on the high road to fortune.

FRUIT PIES.—The acid in fruit pies may be neutralized by adding to each as much *carbonate of soda* as will cover a twenty-five cent piece. This simple precaution, which does not affect the flavor of the fruit, will prevent much sickness, and save much sugar, otherwise needed to render the sour sweet.

The New Commissioner of Patents.

In our last issue we announced the appointment of Hon. W. D. Bishop, of Bridgeport, Conn., to the office of Commissioner of Patents. We now have the pleasure to present to our readers an admirable likeness of this distinguished gentleman. This likeness was photographed on wood by the patented process described on page 117, Vol. XIII., of the SCIENTIFIC AMERICAN, and which has now become an extensive business, as practiced by Messrs. Waters & Tilton, at No 90 Fulton street, this city.

Mr. Bishop was born at Bloomfield, N. J., on the 14th of September, 1827, and is therefore but 31 years of age. At the age of 7 years he removed with his father's family to the State in which he now resides. He early exhibited a great fondness for mechanics and sciences generally, so much so, that his father at one time seriously entertained the idea of educating him for some scientific pursuit. He entered Yale College in 1845, graduated in 1849, and afterwards engaged in the study of law, but never practiced it, in consequence of the sudden death of his father, whereby he became one of the executors of his father's large estate, and the duties of this executorship occupied his time for the succeeding three years. These duties were of an arduous character, owing to the fact that the completion of the N. Y. & New Haven, Washington & Saratoga and Naugatuck Railroads (of which Mr. Bishop, Senr., had been the contractor) devolved upon the executors. Upon the completion of these important public works, Commissioner Bishop devoted his entire attention to railroad interests, in the several capacities of contractor, chief engineer, superintendent and president, which latter position he now holds, in relation to one of the best managed railroads in Connecticut. Mr. Bishop has acquired the reputation of a practical and thorough man of business, and has an ambition which might work the destruction of any one if uncontrolled by a calm and well-balanced judgment.

With Mr. Bishop's political principles we have nothing to do. Our object is to show to our readers the qualifications and character of the man who has been elected to fill the office of Commissioner of Patents, as in this respect they will be deeply interested. It is unusual for a young man to attain so speedily the dignified position Mr. Bishop now occupies in the public eye. It shows what can be accomplished by assiduity, perseverance, and a well-directed ambition.

Since 1852 Mr. Bishop has been a candidate for the Connecticut Legislature, was a delegate to the Cincinnati Convention, and in 1857 was chosen to represent his district in Congress. He received upwards of 3,000 votes more than the presidential candidate of the same party; and while in Congress he was Chairman of the Committee of Manufacturers, and acquired popularity as an eloquent speaker and ready debater. His course while in Congress was that of a strict party man; and as some of the more prominent acts of that Congress did not meet the approbation of his constituents, he was, as people sometimes say, "elected to stay at home," receiving, however, between two and three thousand more votes than he had received at the time of his election. Before he had fairly recovered from the struggle of a sharp political campaign, he was tendered the appointment to the Commissionership of Patents, as the successor to Hon. Joseph Holt, now Postmaster-General of the United States.

To fill the place thus made vacant by the removal of so gifted a man as Mr. Holt is no easy task. When we consider the important interests that center in the Patent Office, and the conflicts that often arise between the claims of one inventor and another, involving delicate questions of law and fact, and the necessity of the strictest integrity in the discharge of the duties of this position, it might at first appear somewhat presumptuous on the part of the President to select so young a man for so important a trust. But so far as the press has spoken in reference to the fitness of Mr. Bishop for the office, there has been but one opinion, so far as we have seen, and from our intimate personal knowledge of his qualifications, we believe he will address himself to the duties of his new post with a zeal and discretion worthy of an older head. Mr. Bishop is a clear thinker, has an active and well-cultivated mind, is a good disciplinarian, and is accustomed to take the lead. We are therefore of the opinion, as expressed in our last number, that his administration will be wise and prudent, and, on the whole, popular and satisfactory.

ENLARGEMENT
OF THE
"SCIENTIFIC AMERICAN."

Volume I., Number 1—New Series.

The Publishers of the SCIENTIFIC AMERICAN respectfully announce to their readers and the public generally, that, on the first day of July *next* (1859), their journal will be enlarged and otherwise greatly improved; and at that time will be commenced "Volume I., No. 1, New Series," which will afford a more suitable opportunity for the commencement of new subscriptions than is likely to occur again for many years.

The form of the journal will be somewhat changed from what it now is, so as to render it better adapted for binding and preservation; and instead of eight pages in each number as now, there will be *sixteen* and in a completed yearly volume the number of pages will be doubled to 832, or 416 more than now. By this change, also, there will be a large increase in the quantity of the reading matter: and it is the confident expectation of the publishers that they will be able to make it the most useful and instructive journal now issued from the American press.

The SCIENTIFIC AMERICAN is no new enterprise. Its character and influence have been acknowledged and felt for nearly fourteen years past. It is the only journal of the kind in the United States which has met with success; and since its commencement, no less than fifteen similar journals have been started, and have expired after a brief and unhealthy career. The SCIENTIFIC AMERICAN is published at a price which places it within the reach of all; and as a work of reference for the Workshop, Manufactory, Farm, and Household, no other journal exceeds or even equals it in the value and utility of its information. Its practical recipes alone oft-times repay the subscription price ten-fold. The Inventor will find it, as heretofore, the mirror of the Patent Office, and the reliable record of every claim issued weekly by the Office, the list being officially reported for its columns. The Machinist, the Manufacturer, the Farmer, the Planter, the Engineer, the Architect, the Millwright, the Chemist—in fact, all who take the slightest interest in the development and progress of art, science and industry, will find its pages useful and instructive. With the enlargement of the SCIENTIFIC AMERICAN, we shall be enabled to widen the sphere of our operations, and it is our intention to devote space to a Price Current, and a column or two to the Metal and Lumber markets, and such other branches of trade as may be interesting, and these will be given as often as we may think it useful to our readers.

The value of the SCIENTIFIC AMERICAN as a work of reference is shown by the large number of volumes yearly bound by subscribers; and there is now a constant demand for all the back volumes which it is impossible for us to supply. Large sums have been offered for the complete work.

The increased outlay to carry out our design of enlargement will amount to eight thousand dollars a year on our present edition; and in view of this we appeal to our readers and friends to take hold and aid in extending our circulation. Think of getting, at our most liberal club rates, a yearly volume containing about 600 original engravings and 832 pages of useful reading matter, for less than three cents a week! Who can afford to be without it at even ten times this sum?

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